

Revision of the genus *Trilophus* Andrewes from the Oriental region (Coleoptera, Carabidae)

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Revision of the genus *Trilophus* Andrewes from the Oriental region (Coleoptera, Carabidae). - The genus *Trilophus* Andrewes is revised and distinguished to the next related genera. A key is provided for all 28 species. The 4 species *T. interpunctatus* Putzeys, *T. hispidulus* Putzeys, *T. schmidtii* Putzeys, and *T. birmanicus* Bates are redescribed and lectotypes/paralectotypes are designated. The following 24 new species are described: *T. acuminatus* n. sp., *T. alternans* n. sp., *T. appulsus* n. sp., *T. arcuatus* n. sp., *T. baehri* n. sp., *T. convexus* n. sp., *T. crinitus* n. sp., *T. ellipticus* n. sp., *T. elongatus* n. sp., *T. fuscus* n. sp., *T. hirsutus* n. sp., *T. imitator* n. sp., *T. latiusculus* n. sp., *T. loebli* n. sp., *T. lompei* n. sp., *T. palpireductus* n. sp., *T. parallelus* n. sp., *T. schawalleri* n. sp., *T. serratulus* n. sp., *T. serratus* n. sp., *T. setosus* n. sp., *T. tonkinensis* n. sp., *T. variabilis* n. sp., and *T. weberi* n. sp. The distribution of the species is displayed in maps. Four different main distribution patterns are distinguished. The possible relationships of the species groups and species described in a cladogram are based on a reconstructed phylogeny applying the methods proposed by Hennig. Phylogenetic evidence demonstrates that species showing most plesiomorphic character states are concentrated in NE-India, Thailand, and Indochina assumed to be the region of origin for the genus. Sri Lanka, the South Malayan islands up to west of Wallace's line, the Himalayas up to northern Pakistan, and Taiwan are inhabited by species showing a higher degree of apomorphic characteristics.

Key-words: Coleoptera - Carabidae - Scaritinae - *Trilophus* - taxonomy - phylogeny - Oriental region

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INTRODUCTION

The genus *Trilophus* Andrewes (Coleoptera: Carabidae, Scaritinae) belongs to the tribe Clivinini (Clivinini according to BASILEWSKY 1973) and occurs exclusively in the Oriental region.

The species are ground living, fossorial, and hydrophile and inhabit environments from lowland up to mountainous regions from northern Pakistan to the Malayan archipelago. Most of the specimens were collected by applying sifting methods or light traps. Due to these methods recent collections often include larger numbers of specimens whereas the old recordings consist mostly of very small series or single specimens. Old recordings as well as collections made in light traps include only macrophthalmic species whereas shifting methods revealed species with humicol adaptations, also.

Between 1846 and 1892 five species were described from India, Burma, and Siam. Four of them, *impunctatus* Putzeys, *interpunctatus* Putzeys, *hispidulus* Putzeys, and *schmidtii* Putzeys, were assigned to the genus *Dyschirius* Bonelli (PUTZEYS 1867, 1877) and one, *birmanicus* Bates, to *Oxydrepanus* Putzeys (BATES 1892).

In 1926, ANDREWES suggested that all these species are better placed in the genus *Oxydrepanus* (ANDREWES 1926) known so far from South America. This had already been recognised by BATES (1892) but not stated in particular. ANDREWES (1926) also synonymized *schmidtii* Putzeys with *birmanicus* Bates. In 1927, ANDREWES found that these species are belonging to a separate group and form a genus of its own. Based on them he described the genus *Trilophus* (ANDREWES 1927). Because he could not clearly interpret the interspecific characters, he synonymized all of them and stated *Trilophus interpunctatus* (Putzeys, 1867) as the only valid taxon. In addition, he distinguished three varieties with names of previously described species (ANDREWES 1927, 1929, 1930).

Thirty years later JEANNEL performed his "Révision des petits Scaritides endogés..." (JEANNEL 1957). He stated that Andrewes' *Trilophus interpunctatus* var. *impunctatus* Putzeys belongs to the separate genus *Trilophidius* Jeannel as *Trilophidius impunctatus* (Putzeys). The genus *Trilophidius* is not revised in this contribution.

For the genus *Trilophus*, faunistical recordings are missing. This may be due to the fact that the species could not be identified exactly until now and that most of the material was collected during the last recent decade.

During the past years, I had the opportunity to study Scaritinae material from different localities of the Oriental region. Among the specimens checked there was

often material belonging to the genus *Trilophus*. In 1994, I was unable to define the species more precisely. So, at that time all material was provisionally placed under the taxon *Trilophus interpunctatus* (Putzeys), and the need for revision of the group noted (BALKENOHL 1994).

MATERIAL

Thanks to the kindness of many curators and private collectors it was possible to base this investigation on 944 *Trilophus* specimens out of about 80 populations. The material consists of the available type material as well as material of different expeditions carried out between the beginning of this century and 1996. Although collected at many and very different localities of the Oriental region from north-west Pakistan to Bali, the study is incomplete due to the limited material and the spotty collecting. For some populations of a species only a few specimens were available and in few cases only one specimen was available at all.

Old type material is distributed over various public collections. Most of these specimens could be located and in addition, material seen by Putzeys and Andrewes. As usually, old type material consisted of syntypes. For this material a lectotype and paralectotype(s) have been designated and redescriptions performed for all of these species.

Most of the old type material bears several labels. All label information is listed for each of those specimens. Because I could not decide in some cases which of the different locality spelling is valid, all information given on labels was listed as it appears on the labels. If the genitalia of old type material were prepared this was performed specimen by specimen to avoid any possibility of confusion of labels. The original pins have been reused and if possible the old paper cards have been glued additionally to the pins. This was done to keep all information available for future investigation.

THE MATERIAL EXAMINED IS DEPOSITED IN FOLLOWING COLLECTIONS:

BMNH	The Natural History Museum [= British Museum (Natural History)], London, United Kingdom
CBA	Collection of author, Denzlingen near Freiburg, Germany
CBL	Collection Petr Bulirsch, Lovosice, Czech Republic
CBM	Collection Dr. Martin Baehr, München, Germany
CBB	Collection Jaroslav Básta, Brno, Czech Republic
CDW	Collection Dr. Alexander Dostal, Wien, Austria
CFW	Collection H. Franz, Wien, Austria
CNCI	Canadian National Collection, Ottawa, Ontario, Canada
CSR	Collection Joachim Schmidt, Rostock, Germany
CWB	Collection David W. Wrase, Berlin, Germany
HNHM	Hungarian Natural History Museum, Budapest, Hungary
IRSNB	Institut Royal des Sciences Naturelles de Belgique, Bruxelles, Belgium
MCSN	Museo Civico di Storia Naturale "Giacomo Doria", Genova, Italy
MHNG	Muséum d'histoire naturelle, Genève, Switzerland
MNHP	Muséum National d'Histoire Naturelle, Paris, France
MZUF	Museo Zoologico de "La Specola", Firenze, Italy
NHMB	Naturhistorisches Museum Basel, Switzerland

NHMW	Naturhistorisches Museum, Wien, Austria
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany
ZMHB	Museum für Naturkunde der Humboldt Universität, Berlin, Germany
ZSM	Zoologische Staatssammlung, München, Germany

Other abbreviations:

EI	relative eye index
PT	paratype
wod	without other data
x	arithmetic mean (used in descriptions under measurement)

METHODS

It is obvious to note that the surface of the small specimens has to be clean. Acetic ethyl ester has proven to be best to remove thin layers of dirt from head, pronotum, and elytra of dry material in order to recognise punctures and fine structures on the surface.

Magnifications between 40 and 140 X were used for investigation. Measurements were taken at a magnification of 40 X by using an ocular micrometer. Total length was measured including closed mandibles. The length of the elytra does not include the pedunculus. The width was measured at the maximum width of both elytra and represents the general width of the species. The length of the pronotum was measured along the median line including the flange-like base, and the width was determined at the widest part. If possible, up to 30 specimens per species were measured. Some of these measurements were used to obtain ratios of the pronotum and elytra. These data may help in expressing the relative body shape. *Trilophus* is poorly represented in most collections and therefore statistical analysis of geographic variation is hardly possible. Very often there was only limited material available or if there was more material of a species at hand it often consisted of samples of different populations with limited number of specimens, each. So, descriptive statistics could be performed only exceptionally. In all cases, the mean, range and number of samples measured are given.

The condition of wings was investigated in all specimens in which the sex was determined. If brachypterous specimens were detected, all available material was investigated to note possible di- or polymorphism. The length and width of elytron was used as a relative measurement to express the degree of wing-atrophy.

The genitalia dissected had to be totally cleaned from tissue for unequivocal assignment. They were mounted in a medium according to LOMPE (1989). A small transparent Celon-card was used instead of a paper-card. These Celon-cards are stored on the same needle as the specimens but were placed on a slide for microscopic observation. The aedeagi of some species with fully developed eyes are more sclerotized and were treated with KOH to clear up inner structures. In a few specimens, the endophallus was everted by blowing into the median lobe at base with a fine glass capillette (see Fig. 115). However, this method, like hooking and pulling with a fine needle, can not be performed on a routine basis because the median lobe is too small (~0.3 mm). In addition, these methods often can not be applied without damaging the specimen because the material was collected in other than acetic ethyl ester. During

preparation of the parameres the apical setae tend to break at their basis. Therefore preparation has to be done carefully. In case of loss the setigerous punctures have to be identified. Magnification of 100 to 400 X was used for microscopic investigation of the aedeagi.

It should be mentioned that shrinking of the aedeagus was observed in a few specimens of the old material. In nearly all cases there was enough recent material available so that assigning of the old material could be performed.

There was material on hand which I could not assign with certainty. In all cases, this material consists of few or single specimens and mainly of females. These uncertain specimens are listed as "variations" under the species which I think they may belong to be next related to. However, they were not designed and labelled as type material and may belong to new additional species or subspecies. This method applied by BAEHR (1992) is considered as a critical hint for the user as well as of value for future revisions of the genus.

Theoretically it is assumed that gene flow exists between conspecific populations. If the morphological gap is constantly large enough, it is considered that the populations are not conspecific. In cases of clear sympatry, recognition of species was not difficult due to the obviously different male genitalia. Good examples are *T. appulsus* n. sp. and *T. serratulus* n. sp. or *T. birmanicus* Bates and *T. schmidtii* Putzeys. Because of the fact that this revision is based on external morphological characters and characters of the genitalia only - beside sparse hints from the collecting notes in few species - but not on physiological, cytological, ecological, behavioural, or other characters, it is possible that two allopatric populations are described as two species although they may be extremities of a conspecific population respectively members of a circle of races. In such cases information on clinal variation would be of high interest. However, the material available is still too limited to investigate these interesting questions in detail. If transition of characters with only slight or indistinct gaps was observed and geographic, climatic, or other barriers are missing it is considered that gene flow is uninterrupted, even if the morphological gap between the extremities is distinct. In those cases, the material was assigned to one species, as in *T. variabilis* n. sp., for example. In summary, the basic principles applied by WHITEHEAD (1972) for the genus *Schizogenius* Putzeys and other modern revisions on Carabidae (e.g., BAEHR 1992, 1997) are followed.

TERMS AND MORPHOLOGY

In general, terms and descriptions of characters were based on JEANNEL (1957) and KULT (1959) with the following specifications.

The eyes of some *Trilophus* species exhibit remarkable interspecific differences. Some species show a certain degree of reduction or only a smaller part of the eyes is located dorsally. This character is conspicuous but hard to judge if only single specimens are on hand. This is true also for species with setigerous punctures on the intervals 3 and 5. In order to describe this character more exactly, a ratio - the "relative eye-index" - is used for these species. This ratio is calculated according to the

following formula: maximum width of head measured dorsally at the eyes minus minimal width of frons measured at the inner side of the eyes which is usually at the same line as the maximal width of head. The result is the width of eyes visible dorsally. The width of frons is divided by the width of eyes resulting in the "relative eye-index". For example, for *Trilophus birmanicus* Bates with fully developed and hemisphaerically protruding eyes, the "relative eye-index" is 1.8. For *T. serratulus* n. sp. in which dorsally visible part of the eyes is reduced by approximately 70%, the "relative eye-index" is 4.4. This index has been shown to be more precise than using only the width of eyes. Descriptive statistics of this character is displayed in Fig. 177 for species with setigerous punctures on intervals 3 and 5. Species not mentioned in Fig. 177 have fully developed eyes.

All species exhibit a triangular-like tubercle on the clypeus prolonged on the middle of the frons as a carina, and showing interspecific variation. This carina is called "keel". Some species exhibit a small median impression behind the keel.

The anterior transverse line on the pronotum is weakly developed in most species. However, very often its place is taken by a line of dark pigment under the surface of the pronotum. Only the impression of the transverse line is mentioned in descriptions but not this pigment character.

There is a fine furrow laterally and parallel to the reflexed margin of the pronotum, called "submarginal furrow" (cf. KULT 1947). The anterior part is visible only ventrally. By contrast to most Clivinini, it turns dorsally at about the middle of the pronotum and in some of the species it is prolonged up to the basal constriction, whereas the reflexed margin ends at or before the posterior setigerous puncture. The proepisterna are swollen posterolaterally and visible from above. The degree of this tumidity differs interspecifically. Species with less tumid proepisterna usually exhibit longer and more distinct submarginal furrows.

The base of the pronotum is prolonged respectively produced into a swollen ring. This ring is called "flange". In lateral view, the flange can be interspecifically more or less convex or acute. The dorsal furrow (constriction) between the flange and the pronotum is of different interspecific depth and width.

In the genus *Trilophus*, chaetotaxy provides distinctive characters.

In *T. alternans* n. sp., the labrum is 5-setose. In all other species the labrum is 7-setose. However, in almost all species the 2nd lateral seta is very small and situated towards the base. Often, both setae are not visible directly (covered by the clypeus, covered with glue, rubbed off). But the setigerous punctures are distinctly visible in a slide preparation (Fig. 3). This may be one reason why ANDREWES (1929) described the labrum of *Trilophus* as having 5 setae.

The base of the elytron exhibits 2 setigerous punctures with varying location, both of them arise from tubercles, the regular one near the suture and the 2nd near the humerus. The 2nd is a prolongation of the setigerous tubercles located as an uninterrupted row in the marginal channel of the elytron and extending in *Trilophus* anteriorly over the humerus. However, the basilateral puncture is distinctly separated from the row of the marginal channel by a tooth and it is clearly situated at the base.

In all species, the intervals of the elytra exhibit rows of short setae. These setae are much smaller than the setae arising from the tubercles located in the lateral channel of the elytron. The interval directly beneath the suture (first interval) never bears setae. Very often, setae located on the other intervals respectively very near beside the striae were rubbed off. Due to the fact that the setigerous punctures on intervals are sometimes located near the striae, a magnification of 70 X was used to distinguish between the fine setigerous punctures and punctures of the striae. Setae which are not rubbed off can be seen best by using movable yellow light which can be focused, whereas white light is used to recognise punctures which setae were rubbed off. Counting the intervals with setigerous punctures, four groups of species can be divided: species with setae located on intervals 3 and 5, 3 and 5 and 7, 2 to 6, and 2 to 7. These patterns seem to be extremely constant within the species. Among the 944 specimens checked there was no case out of the pattern. However, within an interval with setae, the number of setigerous punctures varies intraspecifically. The inner intervals usually have larger numbers of setae, and they also show larger variation. For example, species with 23 setae on interval 3 may have up to 2 setae more or less. Intraindividual variation was also observed between the two elytra of the same specimen. As a rule, the number of setigerous punctures given in descriptions refers to the left elytron. Usually the setae are located on the disk. However, in few species the setigerous punctures are extended to the basal and/or apical declivity.

Beside the elytron, the following could be observed: The lateral side of the profemora possesses 14 setigerous punctures which seem to vary in location, but this was not studied in detail. On the pronotum, *Trilophus setosus* n. sp. exhibits more than the regular 2 setigerous punctures at each site of the lateral channel.

Numerous specimens show a yellow spot at the base and/or at the tip of the apex of the elytron. This varies extremely intraspecifically in nearly all of the species exhibiting this characteristic and consequently its diagnostic value is very limited.

In some species the reflexed lateral margin of the elytron is serrate. If present, the teeth are not particularly big. However, the small teeth are clearly visible at a magnification of 40 X if not stated otherwise. The indistinct undulation due to the broad tubercles in the lateral channel and visible more or less distinctly in some specimens is not considered to be serrate.

In contrast to other Clivinini, the legs of *Trilophus* offer only limited distinctive characters. In the anterior tibia, interspecific differences were noted in the length and form of the lateral upper spine and in the movable spur. Other slightly developed differences in the legs seem to be intraspecific variations (but see chaetotaxy: profemora).

The parameres of the male genitalia are conspicuously elongated basally. These long processes are called "petioles". The description of the male genitalia always refer to the natural non-everted position of the aedeagus.

Sexual dimorphism: In some of the species, the surface of the terminal abdominal sternite exhibits different reticulation (e.g., in the *interpunctatus*-group) or a different extent of reticulation (e.g., *T. ellipticus* n. sp.). The male protarsi of *Trilophus* are not dilated. The terminal segment of the labial palpomeres possesses a small sensory field in males.

DISTINGUISHING *Trilophus* FROM RELATED ORIENTAL GENERA

The „Key to Oriental Genera of Clivinini“ (BALKENOHL 1996) leads to the genera *Trilophus* Andrewes, and *Trilophidius* Jeannel. It separates *Trilophus*/*Trilophidius* from other closely-related Oriental Clivinini, e.g., *Syleter* Andrewes. However, the key does not distinguish between *Trilophus* and *Trilophidius*. In addition, occurrence of the genus *Leleuporella* Basilewsky in the Oriental region was unknown until recently (BALKENOHL 1997).

Table 1 may help for easier characterisation of *Trilophus* as well as for updating the key.

Genus **Trilophus** Andrewes, 1927

Trilophus Andrewes, 1927: 263;

Trilophus Andrewes; ANDREWES 1929: 381, type species: *Dyschirius interpunctatus* Putzeys 1867;

Trilophus Andrewes; ANDREWES 1930: 356;

Trilophus Andrewes; CSIKI 1933: 639;

Trilophus Andrewes; BURGEON 1935: 153;

Trilophus Andrewes; JEANNEL 1957: 140;

Trilophus Andrewes; BALKENOHL 1994: 26.

Type species: *Dyschirius interpunctatus* Putzeys, 1866, by subsequent designation, Andrewes, 1927.

DIAGNOSIS: Clypeus elevated as broad triangular tubercle, prolonged on vertex as keel; apical segment of maxillary palpomere conspicuously securiform; segment 2 of antennae attached excentrically to scapus; reflexed margin of pronotum turning mesially in posterior half, proepisternum tumid posterolaterally, distinctly visible in dorsal view; pronotum at base with constriction dorsally, limited laterally by short carinae, elongated into a flange; median line distinctly adjoining constriction; disc conspicuously convex anterior constriction; elytron with 2 basal setigerous tubercles, one near suture and one at humerus; intervals with series of setigerous punctures varying on intervals 3 and 5 to 2 to 7; median lobe of aedeagus strongly arcuate, with minute pili, parameres with conspicuously long petioles basally. Distinguished from the closely related genera *Trilophidius* Jeannel and *Leleuporella* Basilewsky by the conspicuously long petioles of the parameres and the strongly arcuate aedeagus of the male genitalia. In contrast to *Trilophidius*, the median line of the pronotum reaches the basal constriction, the constriction is limited laterally by small carinae, and setae are present on more than the 3rd interval of the elytron. *Leleuporella* is different mainly in the unequal intervals and the comb-like setae on the elytron, the missing triangular-like tubercle on the frons of the head, and the ventral paramere which is nearly completely reduced.

DESCRIPTION

Figs 1-5

Size: Small, 2.0 to 3.3 mm, elongate.

Colour: Shiny, without metallic tinge. Head, pronotum, elytra, ventral surface, brown, in some species yellow. Base and apex of elytron in some species with yellow

TAB. I

Distinguishing characters of the genera *Trilophus*, *Trilophidius*, and *Leleuporella*

Character	GENUS		
	<i>Trilophus</i> Andrewes	<i>Trilophidius</i> Jeannel	<i>Leleuporella</i> Basilewsky
HEAD			
clypeus	triangular	triangular	carinae
frons	keel-like prolongation of triangle	keel-like prolongation of triangle shorter	carinae of different pattern
palpi	securiform	securiform	bottle-like
mandibles	moderately long and acute	shorter	elongated and acute
neck	constriction intimated laterally	constricted by punctures	carinae
PRONOTUM			
median line	to base	not reaching base	to base
convexity at base	conspicuous	flattened	conspicuous
constriction-like channel at base	dorsally, separated laterally by carinae	dorsally and laterally, not separated by carinae	dorsally and laterally, not separated by carinae
ELYTRON			
lateral setae at base	present	present	absent
setae on intervals	2. - 7., different patterns	3.	3. and 5.
form of setae	upright, pointing to all directions	upright, pointing to all directions	distinctly regular, comb-like
distance of intervals	regular	regular	4 th broader as others
convexity of intervals	distinctly convex	flattened	moderately convex
depths of striae	deep	flat	moderately deep
AEDEAGUS			
shape	medium sized or big, strongly arcuate	small, slightly arcuate	moderately big, slightly arcuate
apex	spatulate and flattened bilaterally, or stick-like	broadly rounded, flattened ventrally at apex	spatulate and flattened dorso-ventrally
endophallus	with bristles	without bristles	with bristles
PARAMERES			
reduced	no	no	ventral one reduced
petioles	conspicuously long	short	no petioles
setae at apex	usually 2 (but exceptionally up to 4)	2	asetose
OCCURRENCE			
region	Oriental region	Ethiopian and Oriental region	Ethiopian and Oriental region

spot. Mouthparts, legs, antennae yellow to yellow-brown. Wings of clypeus, anterior margin of supraantennal plates, and reflexed margin of elytra in some species paler or transparent yellowish.

Head: A third to quarter smaller than pronotum, moderately elongate anteriorly. Clypeus fused to frons. Clypeus, wings, supraantennal plates more or less distinctly reflexed margined; Clypeus stright or excised anteriorly, with usually moderately broad channel between tubercle and reflexed margin, completely fused with wings, one clypeofrontal seta at each side, wings obtusely or distinctly projecting, devided from supraantennal plates by notches; supraantennal plates vaulted, prolonged posteriorly as decreasing carinae at margin of eye; clypeus elevated as broad triangular tubercle, increasing evenly from channel of clypeal margin and falling steeply posteriorly, prolonged on frons as keel of variable length and form; clypeus and frons devided from supraantennal plates by deep longitudinal furrows. Furrows diverging posteriorly by splitting into two furrows each at mid-eye level, forming a carina between furrows at each side, with 2 supraorbital setae at each side. Each furrow with broad indistinct fovea posterior tubercle and in some species with 2nd distinct fovea mostly situated at mid-eye level. Frons convex, usually with reticulation, in some species with more or less developed transverse furrow between eyes crossing keel at midway, arising in posterior fovea of longitudinal furrow, interrupted by keel. Neck smooth, constriction at posterior eye level not deep, more or less broadly interrupted at middle. Eyes either hemisphaerically or reduced interspecifically up to 50%. Genae either indistinct or enlarged. Area with isodiametric reticulation laterally posterior genae, distinct in most of the species. Antennal grooves short, not reaching over maxillary fissure. Labrum straight or excised anteriorly, trapeziform, usually with isodiametric reticulation, 5- or 7-setose, fringed laterally. Mandible of moderate length, broadened basally, moderately curved, sharp at apex, ventral furrow with row of fine setae. Apical segment of maxillary palpomere conspicuously securiform, with oval depression dorsally, pubescent ventrally; terminal segment of labial palpomere bottle-like, widened, with indistinct small sensory field in males, penultimate segment bisetose (quadrisetose as in FEDORENKO 1996, fig. 74, p. 19 not observed), ligula with 2 long apical setae separated, paraglossae slender, membranous. Mentum and submentum devided by deep furrow, with two pairs of setae each, median tooth triangular, acute at apex, lobes elongate, much longer as tooth, rounded anteriorly. Antennae pubescent from segment 4 onwards, segment 4 to 10 elongate to moniliform, scapus with long seta in apical half, scapus and segment 2 more or less excentrically attached.

Pronotum: Not globose, in lateral view conspicuously convex basally to constriction. Outline usually subcordate, oblongo-angustate in basal third, usually as long as wide, maximum width at middle or behind middle, commonly narrowed at anterior angles. Surface smooth or with fine wrinkles. Marginal channel with anterior and posterior setigerous puncture (exception *T. setosus* n. sp.). Reflexed lateral border of different length, reaching from anterior angle over anterolateral and in most of the species to posterolateral setigerous puncture, turning mesially in posterior half, extended to basal constriction as obtuse vault with submarginal furrow visible as fine line in some species. Lateral channel usually sharp and deep throughout. Proepisternum

tumid laterally in posterior part, distinctly visible from above. Anterior angles distinct or rounded off, in some species slightly projecting; posterior angles missing; no basal foveae. Anterior transverse line flat, broad, in some species broadly interrupted at middle, sometimes completely missing. Median line distinct, not adjoining anterior transverse line, not reaching anterior margin, in most species deeper and broader to base, adjoining basal constriction. Basal constriction conspicuous, developed dorsally as deep and more or less broad channel, limited dorsolaterally by short but conspicuous longitudinal carinae. Ringlike flange turgide, broader as channel of constriction.

Elytron: Varying in shape from oblongo-elongate with parallel sides up to regularly elliptical. Lateral view of anterior two thirds regularly convex, flattened or transversally depressed, evenly convex posteriorly. Maximum width at or behind middle. Base truncated rectangularly by forming a distinct humerus, obliquely, or regularly convex up to base without visible humerus. Reflexed lateral margin reaching up to peduncle, finer at base, smooth or serrate, humeral tooth of different form and size, situated in prolongation of 6th or 7th stria or 7th interval. Marginal channel usually broad, with series of uninterrupted setigerous tubercles with long setae, prolonged anteriorly over humeral angle, with fold-like carina at apex crossing in some species completely marginal channel, in some species rudimentary; Two conspicuous basal setigerous tubercles, one situated at declivity of 2nd interval and another one at humerus anterior humeral tooth. Scutellar stria intimated in some species. Seven visible punctuate striate striae, deeper mesially, first reaching apex, others ending before or on apical declivity. Intervals of equal distance, with series of uninterrupted setigerous punctures separated into four groups as following: punctures on intervals 3 and 5, 3 and 5 and 7, 2 to 6, and 2 to 7. Setae short, fine, projected upright. Interval 8 forming obtuse carina apically, partly covering lateral channel in most of the species.

Ala: Fully developed or reduced up to one third of the length and width of elytron.

Ventral surface: Proepisternum shiny, flattened ventrolaterally, laterally with submarginal furrow of different depth and length commonly with fine transverse wrinkles, furrow between prosternum and proepisternum developed more or less distinctly, anterior coxal cavities closed, with keel in between. Mesosternum with well developed peduncle, with scutellum dorsally. Metacoxal cavities slightly separated by triangle central part of first visible abdominal sternite. Sternites 3 to 5 of abdomen with pair of paramedian ambulatory setae. Terminal sternite (sternite 6) with apical reticulation of different appearance; 2 apical setae at each side widely separated. Ventral strigae distinct.

Legs: Anterior legs of fossorial type, femur stout, conspicuously swollen, flattened at inner side, with 14 long setae on outer side. Lateral upper spine of protibia of different length, turned more or less ventrally and/or outward; movable spur of different length and curvature; two small lateral teeth. Mesotibia without spur, with some indistinct tubercles laterocaudally, not densely hirsute at inner side; tarsomeres of legs not distinctly fine, first one elongated, usually as long as a third of all five.

Male genitalia: Genital ring closed, sclerotized. Median lobe conspicuously arcuate in most species, with irregularly scattered minute pili; apex usually spatulate,

in few species stick-like; preputial opening large, commonly situated lateroventrally. Endophallus with groups of bristles and usually with teeth. In some species with additional group of bristles/teeth at apical cup. No flagellum visible. Parameres asymmetrical, with conspicuously elongate petioles at base, usually with 2 long nematiform apical setae, each.

Female genitalia: Stylomere sclerotized, conspicuously curved apically, in most species acute at apex, elongate, with 2 ensiform setae and usually 4 long nematiform setae basally, no seta at apex, in some species additional seta between ensiform setae.

Larvae and way of life: Nothing is known so far about the immature stages. This is also true for the next related genera *Trilophidius* Jeannel, *Leleuporella* Basilewsky, and *Syleter* Andrewes.

Habitat: Most species collected in the lowland have fully developed wings. Some of them were collected at light and according to the very limited information available they were collected near water or in swampy habitats or in forests. Species with reduced wings or which wings exhibit polymorphism were mostly collected in the Himalayas or in isolated mountain regions in Meghalaya, South India, or on islands. Available data show that those species were mostly sifted from moist detritus.

Distribution: From the border of the Palaearctic region in North of Pakistan over the Oriental region including the Himalayas, Formosa, and Sri Lanka up to Java.

KEY TO THE SPECIES OF THE GENUS *Trilophus*

In general, the species can be best distinguished by the male genitalia. Therefore it is strongly recommended not only to use the key but also to compare the figures of the male genitalia.

- 1 Setigerous punctures on intervals 3 and 5 of elytron, **and** on one or more other interval(s) 2
- Setigerous punctures on intervals 3 and 5 of elytron, only 11
- 2 Setigerous punctures on intervals 3 and 5 and 7 (group *alternans*) 3
- Setigerous punctures on each of the intervals 2 to 6 or 2 to 7 5
- 3 Eyes flat, reduced, posterior third enclosed by genae; wings of head rounded anteriorly; reflexed lateral margin of elytra serrate (Fig. 17)
..... *T. alternans* n. sp.
- Eyes large, protruding, genae small; wings of head acutely projecting anteriorly; reflexed lateral margin of elytra smooth 4
4. Median line of pronotum fine, invisible in anterior third, not adjoining basal constriction; basal constriction not limited laterally by longitudinal small carinae (Fig. 18); palpi of normal size; macropterous *T. lompei* n. sp.
- Median line of pronotum deep, complete, adjoining basal constriction; basal constriction limited laterally as usual by small longitudinal carinae (Fig. 19); palpi conspicuously shortened; brachypterous
..... *T. palpireductus* n. sp.
- 5 Setigerous punctures on each of the intervals 2 to 6; maximum width of pronotum at middle (group *hispidulus*) 6

- Setigerous punctures on each of the intervals 2 to 7; maximum width of pronotum at end of 2nd third (group *hirsutus*) 9
- 6 Length more than 3.1 mm; elytra flattened in basal half; first stria in basal two thirds as deep as striae 2 to 4 *T. fuscus* n. sp.
- Length less than 3.1 mm; elytra depressed transversally in basal half; first stria in basal two thirds deeper than striae 2 to 4 7
- 7 Base of elytra truncated convexly; frons with no trace of median impression behind keel; reflexed lateral margin of pronotum reaches posterior setigerous puncture (Fig. 6) *T. hispidulus* Putzeys
- Base of elytra truncated more obliquely; frons with small but distinct median impression behind keel; reflexed lateral margin of pronotum reaches scarcely to posterior setigerous puncture 8
- 8 Reflexed lateral margin of pronotum reaches scarcely posterior setigerous puncture (Fig. 8); surface of head moderately elongate chagreened laterally to keel and on frons *T. baehri* n. sp.
- Reflexed lateral margin of pronotum ends at middle between anterior and posterior setigerous puncture (Fig. 9); surface of head smooth laterally to keel and indistinctly striolate on frons *T. crinitus* n. sp.
- 9 Pronotum convex, with 2 lateral setigerous punctures situated in lateral marginal channel, longer than wide 10
- Pronotum flattened, with 5 lateral setigerous punctures situated in lateral marginal channel, wider than long (Fig. 16); setigerous punctures on intervals situated at middle *T. setosus* n. sp.
- 10 Pronotum with median line fine (Fig. 14); eyes well developed, protruding; reflexed margin of elytron smooth *T. hirsutus* n. sp.
- Pronotum with median line sharp, deep (Fig. 15); eyes reduced, flattened; reflexed margin of elytron subserate *T. arcuatus* n. sp.
- 11 Elytra parallel, eyes fully developed but not hemisphaerically convex, thought somewhat elongate and/or flattened (group *interpunctatus*) 12
- Elytra rounded at lateral margin with maximum width at or behind middle; eyes hemisphaerically protruding, regularly convex, or reduced ... 14
- 12 Segment 5 - 10 of antennae moniliform; striae 2 - 7 of elytra slightly impressed, intervals flattened; eyes slightly convex; marginal channel of pronotum small totally (Fig. 1); length 2.2 - 2.6 mm *T. interpunctatus* Putzeys
- Segments 5 - 10 of antennae elongate; striae 2 - 7 of elytra distinctly impressed, intervals distinctly convex; eyes moderately convex; marginal channel of pronotum deep anteriorly, broader and flattened posteriorly 13
- 13 Striae ending at beginning of apical declivity; row of setigerous punctures of 3rd interval ending on apical declivity; longitudinal furrows on frons with conspicuous rounded fovea at each side, frons with isodiametric reticulation; margin of clypeus with small channel at middle; length 2.5 - 2.7 mm *T. parallelus* n. sp.

- Striae reaching nearly up to apex, ending on obtuse vault-like carina of 8th interval; row of setigerous punctures of 3rd interval reaching up to tip of apex; foveae in furrows on frons indistinct; frons with longitudinal reticulation; margin of clypeus with broad and flattened channel at middle; length 2.3 - 2.5 mm *T. appulsus* n. sp.
- 14 Maximum width of elytra at middle, margin regularly rounded from humerus to apex 15
- Elytron dilated behind middle, margin either straight but diverging posteriorly, or much less rounded anteriorly than posteriorly 21
- 15 Elytron slightly transversally depressed in anterior half, base truncated obliquely or rectangularly; eyes fully developed, large; alae fully developed (group *acuminatus*, partly) 16
- Elytra convex in lateral view or slightly explanate on disk, base oblique, slightly concave; eyes reduced; alae reduced (group *ellipticus*, partly) 17
- 16 Elytra conspicuously oblongo-elongate, base truncated rectangularly (Fig. 30); supraantennal plates with longitudinal reticulation; antennae elongate; reflexed margin of pronotum complete *T. elongatus* n. sp.
- Elytra subelongate, base truncated obliquely (Fig. 29); supraantennal plates smooth; antennae submoniliform; reflexed margin of pronotum ending at middle between lateral setigerous punctures . . . *T. acuminatus* n. sp.
- 17 Reflexed margin of elytra smooth, outline conspicuously elliptical (Fig. 22); setigerous punctures of pronotum somewhat removed from lateral channel; length 2.6 - 2.9 mm *T. ellipticus* n. sp.
- Reflexed margin of elytra finely or distinctly serrate, outline sub-elliptical or elongate; setigerous punctures of pronotum situated at/in lateral channel 18
- 18 Eyes conspicuously reduced, nearly flat in dorsal view; genae as high as and covering half of eyes; frons finely irregularly reticulated; maximum width of pronotum at posterior third 19
- Eyes reduced but convex; genae nearly not as high as eyes, covering eyes by one third; maximum width of pronotum slightly behind middle . . . 20
- 19. Reflexed margin of elytra distinctly serrate; fold-like carina of marginal channel at apex intimated at margin, not crossing channel; proepisterna less distinct in dorsal view (Fig. 27) *T. serratus* n. sp.
- Reflexed margin of elytra finely serrate; fold-like carina of marginal channel at apex distinct, crossing channel completely; proepisterna moderately tumid (Fig. 24) *T. serratulus* n. sp.
- 20 Anterior margin of labrum moderately concave; clypeus regularly excised; anterior margin of pronotum straight; fold-like carina of marginal channel at apex of elytra intimated at margin, not crossing channel; proepisterna less distinct (Fig. 26) *T. schawalleri* n. sp.
- Anterior margin of labrum straight; clypeus nearly straight at middle; anterior margin of pronotum slightly bisinuate; fold-like carina of

- marginal channel at apex of elytra distinct, crossing channel completely; proepisterna moderately tumid (Fig. 28) *T. convexus* n. sp.
- 21 Eyes reduced; genae distinct; fold-like carina of marginal channel at apex of elytra distinct, completely crossing channel (group *ellipticus*, partly) 22
- Eyes fully developed; genae indistinct; fold-like carina of marginal channel at apex of elytra indistinct, not crossing channel completely (group *acuminatus*, partly) 24
- 22 Eyes conspicuously reduced; genae conspicuous; frons of head with irregular reticulation; antennae moniliform; margin and channel of elytra stronger developed; apex of aedeagus spatulate (Figs 122, 125, 130, 133) 23
- Eyes reduced but still distinctly convex; genae covering a quarter of eye only; frons of head with isodiametric reticulation; antennae elongate; margin and channel of elytra gracile, apex of aedeagus stick-line (Figs 111, 114, 115) *T. variabilis* n. sp.
- 23 Reflexed lateral margin of pronotum extended over posterior setigerous puncture; base of elytra truncated rectangularly; anterior three quarters of pronotum slightly convex in lateral view (Fig. 51); apex of aedeagus conspicuously flattened *T. loebli* n. sp.
- Reflexed lateral margin of pronotum just reaching posterior setigerous puncture; base of elytra truncated slightly convex; anterior third of pronotum flattened in lateral view (Fig. 53); apex of aedeagus moderately flattened *T. weberi* n. sp.
- 24 Reflexed lateral margin of pronotum ending before posterior setigerous puncture, marginal channel broadened, flat posteriorly and ending at middle between punctures (Fig. 31); clypeus and wings of head distinctly shortened; pronotum flattened and broadened, median line not deep at middle *T. latiusculus* n. sp.
- Reflexed lateral margin of pronotum ending at posterior setigerous puncture, marginal channel smaller and deeper, ending at posterior puncture; clypeus and wings of head normal for genus; pronotum not flattened and broadened, median line deep at middle 25
- 25 Anterior margin of pronotum straight; maxillary palpi slightly shortened; keel on frons blunt, shorter as triangle-like elevation of tubercle *T. imitator* n. sp.
- Anterior margin of pronotum bisinuate or convex; maxillary palpi typical for genus; keel on frons of head sharp, as long or longer than triangle-like elevation of tubercle (group *schmidtii*) 26
- 26 Frons of head with isodiametric reticulation; maximum width of pronotum behind middle, lateral channel of same depth and width in whole length; eyes hemisphaerically protruding; apex of aedeagus stick-like (Figs 103, 106) *T. birmanicus* Bates
- Frons of head with fine longitudinal reticulation; maximum width of pronotum at middle, lateral channel of different depth and width from

- anterior angles to posterior setigerous punctures; eyes large and convex but not hemisphaerically protruding; apex of aedeagus spatulate 27
- 27 Clypeus, wings, and supraantennal plates finely margined; median line of pronotum fine at middle, anterior margin slightly convex (Fig. 12); base of elytron truncated obliquely, base and tip of apex yellowish; humeral tooth moderate; apex of aedeagus moderately arcuate (Fig. 99) *T. schmidtii* Putzeys
- Clypeus, wings, and supraantennal plates distinctly margined; median line of pronotum conspicuously sharp throughout, anterior margin bisinuate (Fig. 20); base of elytron truncated convexly, base and apex of same colour as disk; humeral tooth sharply projecting; apex of aedeagus hook-like arcuate (Fig. 107) *T. tonkinensis* n. sp.

THE SPECIES

GROUP *hispidulus*

Diagnostic combination of characters: Species of this group may be distinguished by the following combination of characters: Medium to large sized; wings of clypeus rounded anteriorly, eyes fully developed, genae small, antennae subelongate to moniliform, labrum with regular transverse reticulation; maximum width of pronotum at middle, anterior transverse line intimated at extremities, posterolateral tumidity of the proepisterna conspicuous, size of flange big; setae on the elytron present on each of the intervals 2 to 6.

Trilophus hispidulus Putzeys, 1866

Figs 6, 39, 72-75, 158

Dyschirius hispidulus Putzeys, 1866: 98;

Oxydrepanus hispidulus Putzeys; ANDREWES 1926: 378;

Trilophus interpunctatus var. *hispidulus* Putzeys; ANDREWES 1927: 265;

Trilophus interpunctatus var. *hispidulus* Putzeys; ANDREWES 1929: 385;

Trilophus interpunctatus var. *hispidulus* Putzeys; ANDREWES 1930: 357.

MATERIAL EXAMINED

A. Type material. Lectotype (by present designation): ♂. Labels: silver, small / yellow, small, Siam Bgk. / brown, *Dyschirius hispidulus* Putz. dét. J. Putzeys / white, red, Syntype / white, *Trilophus interpunctatus* P. v. *hispidulus* Putz. cotype H.E. Andrewes 1928 / brown, Soc. Ent. Belg. Coll. Putzeys; (IRSNB).

Paralectotypes: 2 ♀. Labels: silver, small, / yellow, small, Siam Bgk. / white, Siam Bangkok Coll. Castelnau / white, *Dyschirius hispidulus* Putz. teste Putzeys / white, Museo Civico di Genova; (MCSN).

Comments: PUTZEYS (1867: 98) based his description on 3 specimens from Siam. They are available and served as type material. These individuals obviously represent a close series due to the following reasons: Identical material (paper-cards, pins) was used for mounting. The size, colour, and material of the original labels are identical, and the handwriting (by Putzeys) is identical including the wording/abbreviations. In addition, there are 5 specimens available, partly showing labels "teste Putzeys" or "det. J. Putzeys". They were not considered as type material because they were all labelled differently, the material, colour, size, and handwriting of the labels is different, or they were labelled other than Siam (comp. B.).

B. Other material. 1 ♂. Labels: green, small / beige, Siam Bangkok / yellow-brown, *Dyschirius hispidulus* P. / white, Siam Bangkok Coll. Castelnau / white *Dyschirius hispidulus* Putz. teste Putzeys / white, Museo Civico di Genova; (MCSN); - 1 ♀. Labels: silver, small / blue, Siam Bangkok / white, Siam Bangkok Coll. Castelnau / white, *Dyschirius hispidulus* Putz. teste Putzeys / white, Museo Civico di Genova; (MCSN); - 1 ♀. Labels: silver, small / yellow, *Dyschirius hispidulus* P. / white, Siam Bangkok Coll. Castelnau / white, *Dyschirius hispidulus* Putz. teste Putzeys / white, Museo Civico di Genova; (MCSN); - 1 ♀. Labels: white, Siam, Bangkok / brown, Soc. Ent. Belg. Coll. Putzeys / brown, *Dyschirius hispidulus* Putz. dét. J. Putzeys (IRSNB); - 1 ♂. Labels: yellow, Calcutta / brown, Soc. Ent. Belg. Coll. Putzeys / grey, *Dyschirius schmidtii* Putz. dét. J. Putzeys / white, red, Syntype; (IRSNB); - 1 ♀. Labels: blue, Siam / white, Bowring. 63.47* / white, *Trilophus interpunctatus* v. *hispidulus* Putz. compared with type H.E.A. (BMNH); - 1 ♂, Indo Chine, Cambodja 1913/14, Coll. Dussault, wod (NHMB); - 2 ♂, NO-Thailand, Khon Kaen, 25.V.1980, 23.11.1980, at light, leg. S. Saowakontha (ZMHB/CBA); - 1 ♀, Laos, Ventiane 64 R, Coll. J. Ochs in Coll. M. Curti, wod (MHNG); - 1 ♀, Labels: Bangkok / Kauf 8.1936 von Staudinger / F. van Emden Bequest. B.M. 1960-129. This specimen has been received without head and prothorax (BMNH).

DIAGNOSIS: A medium sized species with subelongate elytra, conspicuously tumid proepisterna, rudimentary anterior transverse line on the pronotum, setigerous punctures present on each of the intervals 2-6 of the elytra, and an indistinct incomplete fold-like carina in the channel at the apex of the elytra. Distinguished from the related species *T. crinitus* by the complete reflexed lateral margin of the pronotum, and from *T. fuscus* and *T. baehri* by the missing reticulation behind the keel on the frons of the head.

REDESCRIPTION

Measurements: Lectotype: Length 2.55 mm, width 0.85 mm, ratio length/width of pronotum 1.02, ratio length/width of elytra 1.71. Other material: Length 2.55 - 3.05 mm ($x = 2.75$ mm*), width 0.82 - 0.98 mm ($x = 0.89$ mm*), ratio length/width of pronotum 1.00 - 1.07 ($x = 1.05$ *), ratio length/width of elytra 1.70 - 1.79 ($x = 1.73$ *); (*n = 13).

Colour: Head, pronotum, elytron and ventral surface middle to dark brown. Base of elytron with intimated light-brown spot. Mouthparts and legs yellow-brown. Wings of clypeus and anterior part of supraantennal plates transparent yellowish. Mandibles black at apex.

Head: A third smaller than pronotum. Clypeus, wings, supraantennal plates inconspicuously margined; Clypeus moderately excised anteriorly, wings broad, obtusely projecting, devided from supraantennal plates by slight notches; supraantennal plates conspicuously convex; keel on vertex shorter than tubercle, anteriorly as elevated as tubercle, decreasing posteriorly. Clypeus and frons divided from supraantennal plates by deep longitudinal furrows. Furrows diverging posteriorly by splitting into two furrows at mid-eye level, forming a carina between furrows. Frons distinctly convex, with inconspicuous reticulation laterally to keel. Slight neck constriction at posterior eye level, broadly interrupted at middle. Eyes large, protruding, posterior quarter of ventral part enclosed by genae. Genae small, not projecting laterally. Labrum stright, thought slightly bisinuate. Mandibles distinctly acute at apex. Antennae reaching basal constriction of pronotum, segment 4 to 10 submoniliform.

Pronotum (Fig. 6, 39): Lateral view: Anterior half moderately convex, slightly flattened posterior basal constriction; frontal view: moderately convex, slightly flattened at median line. Outline subcordate, slightly longer than wide, maximum width at middle, narrowed distinctly at anterior angles. Anterior margin slightly bisinuate. Reflexed lateral border evenly rounded, reaching to posterior setigerous puncture, more distinctly rounded anteriorly, extended to basal constriction as obtuse vault. Proepisternum strikingly tumid laterally in posterior part. Anterior angles distinct, blunt, slightly projecting. Anterior transverse line intimated at extremities. Median line distinct, deeper and broader in basal half. Surface smooth. Ringlike flange turgid, convex, twice as broad as channel of constriction.

Elytron (Fig. 6): Anterior half transversally depressed. Subelongate, sides nearly straight anterior middle but diverging, evenly rounded in apical half. Maximum width behind middle. Base truncated convexly. Marginal channel broad, fold-like carina at apex indistinct, incomplete; reflexed margin conspicuous from humeral tooth to apex. Humeral tooth moderate, situated in extended projection of 6th stria, turning dorsally and backwards. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus and a smaller one at declivity of second interval. Scutellar stria intimated, with fine carina laterally to scutellar stria. First stria conspicuously deep, stria 2 to 5 fairly deep, punctuate, other striae developed as rows of punctures. Intervals 1 to 5 moderately convex, other more flattened, 8th forming obtuse carina in apical 2 fifths, 2 to 6 with series of 16 to 22 setigerous punctures situated at middle. First stria reaching apex, all others ending abruptly on apical obtuse vault-like carina of 8th interval.

Ala: Fully developed.

Lower surface: Proepisternum smooth, without submarginal furrow, furrow between prosternum and proepisternum invisible in anterior third. Terminal segment of abdominal sternite with transverse reticulation.

Protibia: Movable spur as long as spine. Spine stout, turned distinctly ventrally and slightly laterally.

♂: *Aedeagus* (Figs. 72, 75): Median lobe moderately arcuate at middle, nearly straight in lateral view. Apex spatulate, narrowed and slightly arcuate apically. Endophallus with bristles. Parameres (Figs. 73, 74), bisetose.

♀: *Stylomere* (Fig. 158): Broadened mesially, slightly arcuate.

Distribution: The species is found in Thailand, Laos, and Cambodja (Fig. 180).

Remarks: The material from „Nagpur“ listed in Andrewes (1929, 1930) could not be located. Andrewes's (1930) record „Sumatra“ possibly refers to *T. setosus* n. sp.

***Trilophus fuscus* n. sp.**

Figs 7, 40, 61-64

Type material: Holotype: ♂, Thailand, NE Bangkok, Khao Yai Nat. Park E Heo Suwat Waterfalls, 800 - 900 m, 01.XII.1985, leg. I. Löbl & D. Burckhardt (MHNG).

Paratype: 1 ♂, same data as holotype (CBA).

DIAGNOSIS: A big sized species with oblongo ovate elytra, rudimentary anterior transverse line on the pronotum and median line conspicuous in total length, and

setigerous punctures present on the interval 2-6 of the elytra. Distinguished from the related species *T. hispidulus*, *T. baehri*, and *T. crinitus* by the big size, the elongate elytra, the lateral channel of the pronotum which is elongated to the basal constriction as distinct submarginal furrow, and the slender palpomeres. Moreover, *T. crinitus* is distinguished by the incompletely reflexed lateral margin of the pronotum, *T. hispidulus* by the distinct and complete fold-like carina at the apex of the elytra, and *T. baehri* by the short keel on the frons of the head.

DESCRIPTION

Measurements: Length 3.30 mm; width 1.02 / 1.03 mm, 1.03 (PT); ratio length/width of pronotum 1.04 / 1.07, ratio length/width of elytra 1.78 / 1.80.

Colour: Head, pronotum, elytron, and ventral surface conspicuously dark brown. Base of elytron with broad light-brown spot, small but distinct yellowish spot at apex. Mouthparts yellow. Legs and antennae middle-brown.

Head: A third smaller than pronotum. Clypeus, wings, supraantennal plates finely margined. Clypeus regular and slightly excised anteriorly, wings obtuse, slightly projecting, devided from supraantennal plates by notches; supraantennal plates conspicuously convex; keel on vertex sharp, as long and as elevated as tubercle. Clypeus and frons devided from supraantennal plates by deep longitudinal furrows. Each furrow diverging posteriorly by splitting into 2 furrows at mid-eye level, forming carina between furrows; 2nd foveae in furrows flat. Frons moderately convex, with elongate reticulation nearly up to neck constriction, small but distinct median impression behind keel. Neck constriction at posterior genae level slight, not interrupted at middle. Eyes large, subelongate, protruding, posterior fifth of ventral part enclosed by genae. Genae short, not projecting laterally. Labrum 3-lobed. Antennae not reaching basal constriction of pronotum, segment 4 to 10 subelongate.

Pronotum (Figs. 7, 40): Lateral view: regularly convex; moderately and regularly convex in frontal view. Outline subcordate, slightly longer than wide, maximum width at middle, narrowed at anterior angles. Anterior margin slightly bisinuate. Reflexed lateral border evenly rounded from anterior angle to posterior setigerous puncture, extended distinctly to basal constriction as obtuse vault and submarginal furrow. Proepisternum strikingly tumid posterolaterally. Anterior angles rectangularly projecting. Anterior transverse line intimated at extremities. Median line distinct, deeper and broader in basal two thirds. Surface with few scattered very minutely sticked punctures. Ringlike flange acute, twice as broad as the small and deep channel of constriction.

Elytron (Fig. 7): Anterior half flattened, evenly convex in posterior half. Elongate, sides nearly straight anterior middle but diverging, evenly rounded in apical half. Maximum width at middle. Base truncated obliquely, with intervals tubercle-like elevated at basal declivity. Marginal channel broad, fold-like carina at apex crossing channel completely; reflexed margin conspicuous from humeral tooth to apex, reaching up to peduncle but with short interruption in front of humerus. Humeral tooth moderate, situated in extended projection of 7th interval, turning dorsally and backwards. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at

humerus and a smaller one at declivity of second interval. Scutellar stria intimated, no carina laterally to scutellar stria. First stria on disc as deep as stria 2 to 4, 5th fairly deep, punctuate, other striae developed as rows of punctures. Intervals 1 to 5 slightly convex, other more flattened, 8th forming obtuse carina in apical half, 2 to 6 with series of 18 to 23 setigerous punctures situated at middle. First stria reaching apex with increasing depth, all others ending finely before obtuse apical vault-like carina of 8th interval.

Ala: Fully developed.

Lower surface: Proepisternum with few scattered minutely stuck punctures, with submarginal furrow in anterior quarter, furrow between prosternum and proepisternum invisible in anterior fifth. Terminal segment of abdominal sternite with conspicuous transverse reticulation.

Protibia: Movable spur shorter than spine. spine moderately turned ventrally.

♂: *Aedeagus* (Figs. 61, 64): Median lobe slender in dorsal view, distinctly arcuate at middle, slightly arcuate in lateral view. Apex spatulate, arcuate, slightly twisted, cross section convex. Parameres (Figs. 62, 63) bisetose.

♀: *Stylomere* unknown.

Distribution: Known from the type locality in the mountainous region north-east of Bangkok (Fig. 180).

Etymology: The name refers to the conspicuously dark-brown colour of the species.

***Trilophus baehri* n. sp.**

Figs 8, 41, 65-67, 159

Type material: Holotype: ♂, Java occident., Pengalengan, 4000', 1893, leg. H. Fruhstorfer, wod (MNHP).

Paratypes: 1 ♂, Java occident., Mons Tjikorai, 4000', 1892, leg. H. Fruhstorfer, 1892 (CBA); 1 ♀, same data as holotype (MNHP).

DIAGNOSIS: A medium sized species with subelongate elytra, slight anterior transverse line on the pronotum, and setigerous punctures present on intervals 2 - 6 of the elytra. Distinguished from the related species *T. hispidulus*, *T. fuscus*, and *T. crinitus* by the strikingly tumid proepisterna, and the different aedeagus.

DESCRIPTION

Measurements: Length 2.60 - 2.80 mm; width 0.82 - 0.90 mm; ratio length/width of pronotum 0.97 - 1.04, ratio length/width of elytra 1.68 - 1.78.

Colour: Head, pronotum, elytron, and ventral surface middle-brown. Mouthparts, antennae, and legs yellow.

Head: A third to quarter smaller than pronotum. Clypeus, wings, supraantennal plates finely margined. Clypeus regular and slightly excised anteriorly, wings obtusely projecting, devided from supraantennal plates by notches; supraantennal plates conspicuously convex; keel on vertex sharp, as long and as elevated as tubercle, decreasing posteriorly. Clypeus and frons devided from supraantennal plates by deep longitudinal furrows. Furrows diverging posteriorly, with 2nd fovea at eye level. Supraorbital furrow divided from frons by distinct carina; carina separated from

supraantennal plates by fine transverse incision. Frons moderately convex, with elongate reticulation up to neck constriction, small but distinct median impression behind keel. Neck constriction at posterior genae level indistinct, broadly interrupted at middle. Eyes subelongate, slightly flattened laterally. Genae distinct, not projecting laterally, enclosing eyes posteriorly by one-sixth. Labrum straight anteriorly. Antennae reaching to basal constriction of pronotum, segment 4 to 10 subelongate.

Pronotum (Figs. 8, 41): Lateral view: disc flattened anteriorly, middle part moderately convex, conspicuously convex posteriorly to basal constriction; frontal view: moderately convex, flattened at median line, conspicuously convex at lateral margin. Outline subcordate, stout, as long as wide, maximum width at middle, narrowed at anterior angles. Anterior margin slightly bisinuate. Reflexed lateral border evenly rounded from anterior angle nearly up to posterior setigerous puncture, extended to basal constriction as distinct obtuse vault. Proepisternum strikingly tumid laterally in posterior part. Anterior angles obtuse, pointed. Anterior transverse line intimated at extremities. Median line distinct, deep in total length. Surface with few scattered very minutely stuck punctures, few fine transverse wrinkles near lateral border. Ringlike flange convex, twice as broad as channel of constriction.

Elytron (Fig. 8): Slightly depressed transversally in anterior half. Elongate, sides nearly straight in basal two thirds but diverging, evenly rounded apically. Maximum width behind middle. Base truncated obliquely. Marginal channel broad, fold-like carina at apex crossing channel completely; reflexed margin conspicuous from humeral tooth to apex. Humeral tooth distinct, situated in extended projection of 7th interval, turning dorsally and backwards. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus and a smaller one at declivity of 2nd interval. Scutellar stria intimated, small carina laterally to scutellar stria. First stria deep, striae 2 to 5 fairly deep, punctuate, other striae developed as rows of punctures. Intervals 1 to 6 slightly convex, other more flattened, 8th forming obtuse carina in apical half, 2 to 6 with series of 18 to 20 setigerous punctures situated at middle. First stria reaching apex with increasing depth, all others more fine apically, ending before obtuse vault-like carina of 8th interval.

Ala: Fully developed.

Lower surface: Proepisternum with few scattered minutely stuck punctures, with submarginal furrow in anterior quarter, furrow between prosternum and proepisternum invisible in anterior fifth. Terminal segment of abdominal sternite with conspicuous transverse reticulation.

Protibia: Movable spur as long as spine. Spine turned distinctly ventrally.

♂: *Aedeagus* (Figs. 65, 67): Median lobe arcuate at middle, slightly arcuate in lateral view. Apex spatulate, moderately arcuate, explanate. Endophallus with few bristles and small teeth. Parameres (Figs. 65, 66), bisetose.

♀: *Stylomere* (Fig. 159): Broad basally, distinctly arcuate, acute apically.

Distribution: Known from the type localities in Java (Fig. 180).

Etymology: The species is dedicated to Dr. Martin Baehr for worthwhile discussions during generating of the manuscript.

Remarks: It should be mentioned that the aedeagus of the holotype is figured in JEANNEL (1957, p. 138, Fig. 6). The original slide preparation has been let as it is. The aedeagus is broken into separate parts and not totally dissected from tissue. However, it could be clearly recognised that it belongs to the holotype although the figure given in JEANNEL (1957, p. 138) does not display the shape and sinuosity correctly.

Trilophus crinitus n. sp.

Figs 9, 42, 160

Type material: Holotype: ♀, Java, Batavia, 1878, leg. Lansberge, wod (MCSN).

DIAGNOSIS: A medium sized species with subelongate elytra, rudimentary anterior transverse line on the pronotum, conspicuously tumid proepisterna, and setigerous punctures present on intervals 2 - 6 of the elytra. Distinguished from the related species *T. hispidulus*, *T. fuscus*, and *T. baehri* by the extremely shortened reflexed lateral margin of the pronotum which ends behind the anterior setigerous puncture.

DESCRIPTION

Measurements: Length 2.80 mm; width 0.91 mm, ratio length/width of pronotum 1.05, ratio length/width of elytra 1.70.

Colour: Head, pronotum, elytron, ventral surface, and front legs middle-brown. Mouthparts, intermediate and hind legs yellowish. Two basal segments of antennae yellowish, other segments darkened. Vault of supraantennal plates yellowish.

Head: A third to quarter smaller than pronotum. Clypeus and wings conspicuously margined; supraantennal plates distinctly margined. Clypeus moderately excised anteriorly, wings obtusely projecting, devided from supraantennal plates by notches; supraantennal plates conspicuously convex; surface of clypeus with isodiametric microsculpture, keel on vertex sharp, as long and as elevated as tubercle. Clypeus and frons devided from supraantennal plates by deep longitudinal furrows with 2nd fovea each. Furrows diverging posteriorly by splitting into 2 furrows at mid-eye level, forming carina between furrows. Frons moderately convex, smooth laterally to keel, indistinct striolation at posterior eye level, small but distinct median impression behind keel. Neck constriction at posterior genae level indistinct, broadly interrupted at middle. Eyes hemispherical, protruding. Genae inconspicuous. Anterior margin of labrum distinctly excised. Antennae not reaching basal constriction of pronotum, segment 4 to 10 moniliform.

Pronotum (Figs. 9, 42): Lateral view: moderately convex; moderately convex in frontal view. Outline subcordate, slightly longer than wide, maximum width at middle, narrowed at anterior angles. Anterior margin nearly straight. Reflexed lateral border shortened, stopping after surpassing anterior setigerous puncture, visible as obtuse vault before reaching basal constriction. Proepisternum conspicuously tumid posterolaterally. Anterior angles obtuse. Anterior transverse line intimated at extremities. Median line distinct, totally deep and broad. Surface with few scattered minutely sticked punctures on surface. Ringlike flange subconvex, twice as broad as channel of constriction.

Elytron (Fig. 9): Slightly depressed transversally in anterior half. Subelongate, sides slightly and evenly rounded in anterior half, stronger apically. Maximum width

at middle. Base truncated obliquely. Marginal channel broad, fold-like carina at apex crossing channel completely; reflexed margin smooth, distinct from humeral tooth to apex, fine at base. Humeral tooth moderate, situated in extended projection of 7th interval, turning dorsally and backwards. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus and a smaller one at declivity of 2nd interval. Scutellar stria intimated at declivity, small carina laterally to scutellar stria. First stria deep, stria 2 to 5 fairly deep, punctuate, other striae developed as rows of punctures. Intervals 1 to 5 slightly convex, other more flattened, 8th forming obtuse carina in apical third, 2 to 6 with series of 18 to 20 setigerous punctures situated at middle. First stria reaching apex, all others ending finely in posterior quarter.

Ala: Fully developed.

Lower surface: Proepisternum with few scattered minutely stuck punctures, with fine submarginal furrow in anterior fifth, furrow between prosternum and proepisternum invisible in anterior fifth. Terminal segment of abdominal sternite with conspicuous subtransverse reticulation.

Protibia: Lateral upper spine stout, short, curved distinctly dorsally. Movable spur as long as spine.

♂: *Aedeagus* unknown.

♂: *Stylomere* (Fig. 160): Conspicuously broadened basally, moderately arcuate.

Distribution: Known from the type locality Jakarta (former Batavia) in Java (Fig. 180).

Etymology: The name refers to the setae on the intervals 2-6 of the elytra.

GROUP *hirsutus*

Diagnostic combination of characters: Species of this group may be distinguished by the following combination of characters: Medium sized; wings of clypeus acute projecting, antennae subelongate, labrum with irregular reticulation; maximum width of pronotum at posterior third, posterolateral tumidity of the proepisterna distinct to conspicuous, form of flange acute and channel of constriction narrow; elytra transversally depressed in lateral view, setae present on each of the intervals 2 to 7.

Trilophus hirsutus n. sp.

Figs 14, 33, 82-85, 153

Type material: Holotype: ♂, India, Kerala, Palghat Hills, Malampuzha Dam, 150 m. 27.XI.1972, leg. I. Löbl, C. Besuchet, R. Mussard (MHNG).

Paratypes: 7♂, 2♀, same data as holotype (MHNG/CBA).

DIAGNOSIS: A medium sized species with subelongate elytra, moderately tumid proepisterna, absent anterior transverse line of the pronotum, and setigerous punctures present on intervals 2 - 7 of the elytra. In contrast to *T. hirsutus*, the related species *T. arcuatus* and *T. setosus* exhibit both, a fully developed median line and a well developed anterior transverse line on the pronotum.

DESCRIPTION

Measurements: Length 2.60 - 2.88 mm ($x = 2.74$ mm*); width 0.80 - 0.89 mm ($x = 0.84$ mm*); ratio length/width of pronotum 1.04 - 1.07 ($x = 1.06$ *); ratio length/width of elytra 1.70 - 1.80 ($x = 1.74$ *); (*n = 10).

Colour: Head, pronotum, elytron, and ventral surface dark-brown. Base of elytron and tip of apex with distinct yellow spot. Mouthparts and antennae yellow.

Head: A quarter smaller than pronotum. Clypeus, wings, supraantennal plates distinctly margined. Clypeus regularly and moderately excised anteriorly, wings rectangular, divided from supraantennal plates by notches; supraantennal plates conspicuously convex; clypeus with indistinct transverse reticulation anteriorly, keel on vertex decreasing, shorter as elevated tubercle. Clypeus and frons divided from supraantennal plates by deep longitudinal furrows. Supraorbital furrow divided from frons by distinct carina. Carina separated from supraantennal plates by slight incision. Frons convex, with variable reticulation nearly up to neck constriction (holotype without, some paratypes with indistinct elongate reticulation). Neck constriction at posterior genae level indistinct, broadly interrupted at middle. Eyes protruding hemisphaerically. Genae short, covering one fifth of eye in dorsal view. Labrum slightly excised anteriorly, with irregular to slightly transverse reticulation. Antennae not reaching basal constriction, segment 4 to 10 subelongate.

Pronotum (Figs. 14, 33): Lateral view: Anterior third slightly flattened, middle part convex, conspicuously convex to basal constriction; conspicuously convex in frontal view. Outline subcordate, longer than wide, maximum width at end of 2nd third, evenly narrowed in anterior half. Anterior margin convex. Reflexed lateral border evenly rounded from anterior angle to posterior setigerous puncture, not extended to basal constriction as obtuse vault. Proepisternum moderately tumid posterolaterally. Anterior angles slightly projecting. Anterior transverse line hardly visible at extremities. Median line fine totally, not deep, invisible in anterior quarter. Surface smooth. Ringlike flange acute, nearly as broad as channel of deep constriction.

Elytron (Fig. 14): Slightly depressed transversally in anterior half. Subelongate, slightly and evenly rounded in anterior three quarters, stronger apically. Maximum width behind middle. Base truncated nearly rectangular to suture. Marginal channel broad, fold-like carina at apex crossing channel completely (indistinct in some PTs); reflexed margin conspicuous from humeral tooth to apex. Humeral tooth inconspicuous, situated in extended projection of 7th stria, turning dorsally and backwards. Lateral margin smooth. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus and a smaller one at declivity of 2nd interval. Scutellar stria intimated at declivity, carina laterally to scutellar stria. First stria on disc as deep as stria 2 to 6, punctuate, stria 7 developed as rows of punctures. Intervals 1 to 4 distinctly convex, 5 and 6 moderately convex, other more flattened, 8th forming obtuse carina in apical quarter, 2 to 7 with series of 21 to 16 setigerous punctures situated at inner striae. First stria reaching apex with increasing depth, all others ending abruptly before apical obtuse vault-like carina of 8th interval.

Ala: Fully developed.

Lower surface: Proepisternum with few scattered minutely stuck punctures, with submarginal furrow in anterior quarter, furrow between prosternum and proepisternum invisible in anterior fifth. Terminal segment of abdominal sternite with moderate transverse reticulation in apical half.

Protibia: Movable spur slightly shorter than spine, turning ventrally in apical quarter. Praeapical lateral denticle sharp and well developed, 2nd smaller, more rounded.

♂: *Aedeagus* (Figs. 82, 85): Median lobe big, slender, regularly arcuate. Apex flattened, fractuate, acuminate. Endophallus with bristles and teeth. Parameres (Figs. 83, 84), bisetose.

♀: *Stylomere* (Fig. 153): Slender, gently arcuate.

Distribution: Known from the type locality in Kerala, South India (Fig. 181).

Etymology: The name refers to the increased number of setae on nearly all of the intervals of the elytron.

***Trilophus arcuatus* n. sp.**

Figs 15, 34, 86-89, 154

Type material: Holotype: ♂, Ceylon, Northern, Puliyan Kulam, 6.II.1970, leg. I. Löbl, C. Besuchet, R. Mussard (MHNG).

Paratypes: 5♂, 1♀, same data as holotype (MHNG/CBA); 1♀, same data but Madhu Road, 5.II.1970 (MHNG).

DIAGNOSIS: A medium sized species with subelongate elytra, conspicuously tumid proepisterna, nearly complete anterior transverse line and fully developed median line on the pronotum, and setigerous punctures present on intervals 2 - 7 of the elytra. Distinguished from the related species *T. hirsutus* and *T. setosus* by the reduced eyes of which half is enclosed by the genae, the flat paralateral sulci on the pronotum, and the lateral margin of the elytra which are subserrate.

DESCRIPTION

Measurements: Length 2.59 - 2.88 mm (\bar{x} = 2.74 mm*); width 0.79 - 0.92 mm (\bar{x} = 0.86 mm*); ratio length/width of pronotum 1.00 - 1.09 (\bar{x} = 1.04*); ratio length/width of elytra 1.71 - 1.78 (\bar{x} = 1.74*); (*n = 8).

Colour: Head, pronotum, elytron, and ventral surface middle-brown. Base of elytron with yellow spot. Mouthparts, antennae, and legs yellow. Vault of supra-antennal plates yellowish.

Head: A quarter smaller than pronotum. Clypeus, wings, supraantennal plates finely but distinctly margined. Clypeus regularly and moderately excised anteriorly, wings rectangular, devided from supraantennal plates by notches; supraantennal plates conspicuously convex; keel on vertex decreasing, as long as elevation of tubercle. Clypeus and frons devided from supraantennal plates by deep longitudinal furrows. Supraorbital furrow divided from frons by distinct carina. Carina separated from supraantennal plate by slight incision. Frons convex, Surface with indistinct longitudinal reticulation, decreasing posteriorly. Neck constriction at posterior genae level indistinct, broadly interrupted at middle. Eyes reduced, slightly convex, posterior half of ventral part enclosed by genae. Genae conspicuous, as high as eyes, covering half of eye in dorsal view. Area with isodiametric reticulation laterally posterior neck constriction small. Labrum slightly excised anteriorly, with irregular reticulation. Antennae not reaching basal constriction, segment 4 to 10 subelongate.

Pronotum (Figs. 15, 34): Lateral view: Slightly flattened anteriorly, moderately convex at middle, conspicuously convex to basal constriction; conspicuously convex in frontal view. Outline subcordate, slightly longer than wide, maximum width at posterior third, narrowed in anterior third. Anterior margin straight. Reflexed lateral border evenly rounded, reaching from anterior angle over posterior setigerous puncture by diameter of puncture, extended to basal constriction as obtuse vault. Proepisternum strikingly tumid posterolaterally. Anterior angles sharp. Anterior transverse line flat, elongated towards median line. Median line sharp, moderately deep in whole length. Surface with fine transverse wrinkles, indistinct paralateral sulcus parallel to marginal channel. Ringlike flange acute, slightly broader as channel of constriction.

Elytron (Fig. 15): Slightly depressed transversally in anterior half. Subelongate, slightly and evenly rounded in anterior three quarters, stronger in apical quarter. Maximum width behind middle. Base truncated slightly oblique. Marginal channel broad, fold-like carina at apex distinct, incomplete; reflexed margin conspicuous from humeral tooth to apex. Humeral tooth distinct, situated in extended projection of 7th interval, turning dorsally and backwards. Lateral margin subserrate. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus and a smaller one at declivity of 2nd interval. Scutellar stria intimated at declivity, carina laterally to scutellar stria. All stria deep, punctuate. Intervals distinctly convex, 8th forming obtuse carina in apical quarter, 2 to 6 with series of 16 to 11, and 7 with 7 to 10 setigerous punctures, approaching inner striae. First stria reaching apex, all others ending abruptly before apical obtuse vault-like carina of 8th interval.

Ala: Reduced, length and width two thirds of elytron each.

Lower surface: Proepisternum with submarginal furrow in anterior third, furrow between prosternum and proepisternum distinct throughout. Terminal segment of abdominal sternite with moderate transverse reticulation in apical two thirds.

Protibia: Lateral upper spine as long as movable spur, turned moderately ventrally.

♂: *Aedeagus* (Figs. 86, 89): Median lobe moderately and regularly arcuate, flattened in apical half. Apex spatulate, broad, conspicuously arcuate. Endophallus with few small teeth. Parameres (Figs. 87, 88), bisetose.

♀: *Stylomere* (Fig. 154): slender, conspicuously arcuate.

Distribution: Known from the type locality in Northern Sri Lanka (Fig. 181).

Etymology: The name focuses on the conspicuously arcuate apex of the aedeagus.

Trilophus setosus n. sp. (Figs 16, 35, 76, 77)

Type material: Holotype: ♂, Sumatra, Palembang, leg. Dr. Förster, wod (MNHP).

DIAGNOSIS: A medium sized species with subelongate and nearly elliptical outline of the elytra, strikingly tumid proepisterna, complete anterior transverse line on the pronotum, and setigerous punctures present on intervals 2 - 7 of the elytra. Distinguished from all other species by the pronotum which exhibits a reduced reflexed lateral margin and 5 setigerous punctures on each side.

DESCRIPTION

Measurements: Length 2.78 mm; width 0.93 mm; ratio length/width of pronotum 0.93, ratio length/width of elytra 1.67.

Colour: Head, pronotum, elytra, and ventral surface dark-brown. Apex of elytron with indistinct yellow spot. Mouthparts, antennae, intermediate and hind legs dark-yellow. Front legs middle-brown. Vault of supraantennal plates and tubercle of clypeus yellowish.

Head: A quarter to third smaller than pronotum. Clypeus amargined, straight. Wings and supraantennal plates finely margined, wings sharply projecting, devided from supraantennal plates by notches; supraantennal plates conspicuously convex; keel on vertex fine, small, shorter as tubercle. Clypeus and frons devided from supraantennal plates by deep longitudinal furrows. Furrows diverging posteriorly. Supraorbital furrow divided from frons by fine carina. Carina separated from supraantennal plate by small incision. Frons moderately convex, with elongate reticulation behind keel, without neck constriction. Eyes hemispherical. Genae short, not projecting laterally, enclosing eyes posteriorly by one-sixth. Labrum with 2 teeth but not deeply excised, with irregular reticulation. Antennae just reaching basal constriction, segment 4 to 10 subelongate.

Pronotum (Figs. 16, 35): Lateral view: Anterior third slightly flattened, convex posteriorly to basal constriction; conspicuously flattened in frontal view. Outline subrectangular, wider than long, maximum width at end of 2nd third, narrowed at anterior angles. Anterior margin slightly convex. Reflexed lateral border reaching from anterior angle to middle, not extended to basal constriction as obtuse vault, with 4 setigerous punctures at margin, a fifth puncture isolated posteriorly. Proepisternum strikingly tumid posterolaterally. Anterior angles obtuse, not projecting. Anterior transverse line broad, flat, extended finely to middle. Median line sharp, deep in posterior half. Surface smooth. Ringlike flange acute, three times as broad as small channel of constriction.

Elytron (Fig. 16): Slightly depressed transversally in anterior half. Subelongate, slightly elliptical, evenly rounded in anterior three quarters, stronger apically. Maximum width behind middle. Base truncated nearly straight. Marginal channel broad, fold-like carina at apex distinct but not completely crossing channel; reflexed margin conspicuous from humeral tooth to apex. Humeral tooth inconspicuous, situated in extended projection of 7th interval, turning dorsally. Lateral margin smooth. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus and a smaller one at declivity of 2nd interval. Scutellar stria intimated at declivity, carina laterally to scutellar stria. All stria deep on disc, punctuate. Intervals 1 to 6 distinctly convex, other moderately convex, 8th forming obtuse carina in apical third, 2 to 7 with series of 17 to 12 setigerous punctures, situated irregularly at middle. First stria reaching apex with increasing depth, all others ending in apical third.

Ala: Fully developed.

Lower surface: Proepisternum smooth, fine submarginal furrow visible at anterior angles, furrow between prosternum and proepisternum visible up to anterior margin. Terminal segment of abdominal sternite with some reticulation in apical third, other part conspicuously shiny.

Protibia: Lateral upper spine turned conspicuously ventrally and moderately outward; movable spur shorter than spine, turning slightly ventrally.

♂: *Aedeagus* (Fig. 76): Median lobe coarctate at apical half. Apex conspicuously arcuate, thickened but spatulate. Endophallus with bristles. Parameres (Figs. 76, 77), bisetose.

The drawing was made from an old preparation (slide) deposited beside the specimen in MNHP. It could not be turned in lateral view for inspection.

♀: *Stylomere*: unknown.

Distribution: Known from the type locality Palembang in Sumatra (Fig. 181).

Etymology: According to the increased number of setae on the pronotum.

GROUP *alternans*

Diagnostic combination of characters: Species of this group may be distinguished by the following combination of characters: Medium to big sized; antennae subelongate, labrum with regular transverse reticulation; maximum width of pronotum at middle, posterolateral tumidity of the proepisterna moderately developed, size of flange small, form acute, channel of constriction narrow; shape of elytra elliptical, channel of lateral margin carinate at apex, setae present on the intervals 3, 5, and 7.

Trilophus alternans n. sp.

Figs 17, 36, 78-81, 155

Type material: Holotype: ♂, Formosa, Korotou, 1.-15.VII.1907, leg. H. Sauter (ZMHB). Paratypes: 2 ♂, 3 ♀, same data as holotype (ZMHB/CBA).

DIAGNOSIS: A medium sized species with elliptical outline of the elytra, moderately tumid proepisterna, weakly developed anterior transverse line and complete median line on the pronotum, and setigerous punctures present on intervals 3, 5, and 7 of the elytra. Distinguished from the related species *T. lompei* and *T. palpireductus* by the lateral margin of the elytra which is serrate, by the flat reduced eyes, and by the labrum which is 5-setose.

DESCRIPTION

Measurements: Length 2.65 - 2.80 mm ($x = 2.70$ mm*); width 0.84 - 0.91 mm ($x = 0.88$ mm*); ratio length/width of pronotum 1.00 - 1.03 ($x = 1.01$ *); ratio length/width of elytra 1.64 - 1.69 ($x = 1.66$ *); (*n = 6).

Colour: Uniformly middle-brown. Mouthparts and antennae slightly paler.

Head: A third smaller than pronotum. Clypeus, wings, supraantennal plates finely margined. Clypeus regularly and slightly excised anteriorly, wings rounded, slightly projecting, devided from supraantennal plates by notches; supraantennal plates distinctly convex; tubercle on clypeus acute-angular, falling steeply in posterior half, keel on vertex sharp, as long and as elevated as tubercle. Clypeus and frons devided from supraantennal plates by deep longitudinal furrows. Furrows with 2nd fovea, diverging posteriorly, splitting into two furrows at mid-eye level, forming a carina between furrows. Frons convex, with scattered finely sticked punctures on surface, 2-3 rugae and indistinct reticulation laterally to keel. Neck constriction absent. Eyes

reduced, flat, posterior third enclosed by genae. Genae not projecting laterally. Labrum 5-setose, moderately excised anteriorly. Antennae not reaching basal constriction of pronotum, segment 4 to 10 subelongate.

Pronotum (Figs. 17, 36): Lateral view: Slightly transversally depressed at level of anterior transverse line, moderately convex on disc, moderately and regularly convex in frontal view. As long as wide, maximum width at middle, evenly narrowed in anterior third. Anterior margin straight. Reflexed lateral border rounded from anterior angle to posterior setigerous puncture, extended to basal constriction as obtuse vault with fine submarginal furrow. Lateral channel fine, flattened posteriorly. Proepisternum distinctly tumid posterolaterally. Anterior angles blunt, slightly projecting. Anterior transverse line weakly developed. Median line conspicuously deep in whole length, reaching level of anterior transverse line. Surface with scattered minutely stuck punctures and fine transverse wrinkles laterally. Ringlike flange acute, nearly as broad as deep channel of constriction.

Elytron (Fig. 17): Anterior half flattened. Subelongate, elliptical. Margin slightly and evenly rounded in basal half, distinctly rounded in apical half. Maximum width at middle. Base truncated obliquely. Marginal channel broad, fold-like carina at apex indistinct; reflexed margin conspicuous from humeral tooth to apex, serrate to end of 2nd third. Angel of humerus indistinct; humeral tooth distinct, situated in extended projection of 6th stria, turning dorsally and backwards. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus and a smaller one at declivity of second interval. Scutellar stria indistinct, with tubercle-like carina laterally to scutellar stria. First stria as deep as stria 2 to 5, punctuate, other striae developed as rows of punctures. Intervals 1 to 6 moderately convex, other more flattened, 8th forming obtuse carina in apical 2 fifths, 3rd with 18-20, 5th with 14-15, and 7th with 6-7 setigerous punctures situated at middle. First stria reaching apex, all others ending abruptly apically before obtuse vault-like carina of 8th interval.

Ala: Reduced, length and width two thirds of elytron. each.

Lower surface: Proepisternum with indistinct reticulation, fine submarginal furrow in anterior quarter, furrow between prosternum and proepisternum distinct, conspicuously deep in basal 2 thirds. Terminal segment of abdominal sternite with fine transverse striolation.

Protibia: Movable spur shorter than spine, turned ventrally.

♂: *Aedeagus* (Figs. 78, 81): Median lobe moderately arcuate at middle, flattened laterally. Apex spatulate, distinctly arcuate apically, conspicuously explanate. Parameres (79, 80), bisetose.

♀: *Stylomere* (Fig. 155): Slender, fine.

Distribution: Known from the type locality in Taiwan (Fig. 182).

Etymology: The name refers to the altering chaetotaxy on the intervals of the elytron.

***Trilophus lompei* n. sp.**

Figs 18, 37, 68-71, 156

Type material: Holotype: ♂, India, Kerala, Cardamon Hills, Valara Fall, 450 - 500 m, 27.XI.1972, leg. I. Löbl, C. Besuchet, R. Mussard (MHNG).

Paratypes: 1 ♂, same data as holotype; 2 ♀, Kerala, Cardamon Hills, Mundakayam, 100 m, 9.XI.1972, leg. I. Löbl, C. Besuchet, R. Mussard (MHNG/CBA); 1 ♂, Kerala, Cardamon Hills, ca. 50 km NW Pathanamthitta nr. Pambaiyar, 300m, 77°05'E, 09°25'N, 27.-29.XII.1993, leg. Boukal & Keyrral (CBL).

DIAGNOSIS: A medium to big sized species with subelliptical outline of the elytra, distinctly tumid proepisterna, nearly complete anterior transverse line on the pronotum, and setigerous punctures present on intervals 3, 5, and 7 of the elytra. Distinguished from the related species *T. alternans* and *T. palpireductus* by the incomplete median line of the pronotum which is visible on the disc of the pronotum only as well as by the rectangular base of the elytra.

DESCRIPTION

Measurements: Length 2.62 - 3.07 mm ($x = 2.76$ mm*); width 0.89 - 0.98 mm ($x = 0.93$ mm*); ratio length/width of pronotum 0.99 - 1.00 ($x = 1.00$ *); ratio length/width of elytra 1.56 - 1.60 ($x = 1.59$ *); (*n = 5).

Colour: Head, pronotum, elytron, ventral surface, and front legs middle-brown. Base of elytron with distinct small yellow spot, spot at apex indistinct. Mouthparts and antennae yellow. Mandibles dark-brown. Intermediate and hind legs yellowish-brown.

Head: A third smaller than pronotum. Clypeus, wings, supraantennal plates margined. Clypeus deeply excised anteriorly, wings acute, projecting, devided from supraantennal plates by distinct notches; supraantennal plates distinctly convex; keel on vertex decreasing, more than twice as long as tubercle (as long as tubercle in 2 paratypes from different localities). Clypeus and frons devided from supraantennal plates by deep longitudinal furrows. Furrows with 2nd fovea at eye level each, diverging posteriorly, devided from supraorbital furrow by distinct carina; carina separated from supraantennal plates by fine transverse incision. Frons convex, with scattered finely sticked punctures on surface, flat transverse furrow at posterior end of keel (distinct in holotype and 2 paratypes, indistinct in one paratype). Neck constriction absent. Eyes large, protruding, posterior quarter enclosed by genae. Genae not projecting laterally. Area with isodiametric reticulation laterally posterior eyes small. Labrum slightly excised anteriorly. Antennae just reaching basal constriction of pronotum, segment 4 to 10 subelongate.

Pronotum (Figs. 18, 37): Lateral view: Transversally depressed at anterior transverse line, conspicuously convex from anterior transverse line to basal declivity; frontal view: moderately convex, slightly flattened laterally. As long as wide, maximum width at middle. Anterior margin indistinctly bisinuate. Reflexed lateral border rounded from anterior angle to posterior setigerous puncture, extended to basal constriction as obtuse vault. Lateral channel fine, flattened posteriorly. Proepisternum distinctly tumid posterolaterally, but visible from above. Anterior angles marked, slightly projecting. Anterior transverse line more distinct. Median line fine, invisible in anterior third, interrupted before basal declivity, indistinctly adjoining basal constriction. Surface with scattered minutely sticked punctures and fine transverse wrinkles laterally. Basal constriction conspicuous, not limited laterally by small longitudinal carinae. Ringlike flange acute, slightly broader as channel of constriction.

Elytron (Fig. 18): Disc flattened in anterior half. Oblongo-oval, subelliptical. Maximum width at middle, evenly narrowed in anterior third. Base truncated nearly straight. Marginal channel broad, fold-like carina at apex incomplete, indistinct; reflexed margin conspicuous from humeral tooth to apex. Humeral tooth moderate, situated in extended projection of 6th stria, turning dorsally and backwards. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus and a smaller one at declivity of second interval. Scutellar stria indistinct, with tubercle-like carina laterally to scutellar stria. First stria deep, stria 2 to 5 fairly deep, punctuate, other striae developed as rows of punctures. Intervals 1 to 4 moderately convex, other more flattened, 8th forming obtuse vault in apical quarter, 3rd with 18-19, 5th with 12-14, and 7th with 7-8 setigerous punctures situated at inner striae; setae long. First 2 striae reaching apex, all others ending in apical third.

Ala: Fully developed.

Lower surface: Proepisternum with distinct submarginal furrow in anterior quarter, furrow between prosternum and proepisternum distinct. Terminal segment of abdominal sternite with some fine transverse striolation at middle.

Protibia: Movable spur shorter and finer than spine, both distinctly turned ventrally.

♂: *Aedeagus* (Figs. 68, 71): Median lobe distinctly arcuate, concave laterally. Apex spatulate, distinctly arcuate apically, conspicuously explanate. Parameres (Figs. 69, 70), bisetose.

♀: *Stylomere* (Fig. 156): Big, strongly arcuate towards apex.

Distribution: Known from two localities at Cardamom Hills in Kerala (Fig. 182).

Etymology: The species is dedicated to Dr. Arvid Lompe who has made an easy to use and excellent method available for enclosing small genitalia of insects.

***Trilophus palpireductus* n. sp.**

Figs 19, 38, 157

Type material: Holotype: ♀, Indonesia, Bali, Lake Tamblingan, forest litter, 1300 m, 30.X.1991, leg. I. Löbl (MHNG).

DIAGNOSIS: A medium sized species with elongate elytra, moderately tumid and elongate proepisterna, flat but nearly complete anterior transverse line and complete median line of the pronotum, and setigerous punctures present on intervals 3, 5, and 7 of the elytra. Distinguished from the related species *T. alternans* and *T. lompei* by the elongate shape as well as by the shortened palpi.

DESCRIPTION

Measurements: Length 2.82 mm; width 0.87; ratio length/width of pronotum 0.98; ratio length/width of elytra 1.81.

Colour: Head, pronotum, elytron, ventral surface, and front legs dark-brown. Mouthparts, intermediate and hind legs paler. Antennae middle-brown, yellow at apical half.

Head: A third smaller than pronotum. Clypeus, wings, supraantennal plates finely margined; slightly excised anteriorly; wings obtuse, projecting, divided from

supraantennal plates by slight notches; supraantennal plates convex; tubercle on clypeus obtuse-angular, keel on vertex decreasing, shorter as tubercle. Clypeus and frons divided from supraantennal plates by deep longitudinal furrows. Furrows with deep 2nd fovea, diverging posteriorly, splitting into two furrows at mid-eye level, forming a carina between furrows. Frons convex, with scattered finely stuck punctures and indistinct reticulation on surface, indistinct median impression behind keel. Neck constriction flat, indistinct, interrupted at middle. Eyes large, protruding, less than posterior third enclosed by inconspicuous genae. Labrum slightly excised anteriorly. Antennae not reaching basal constriction of pronotum, segment 4 to 10 subelongate. Palpi conspicuously shortened, distinctly hollowed out dorsally

Pronotum (Figs. 19, 38): Lateral view: Slightly flattened anteriorly, conspicuously convex to basal constriction; moderately and regularly convex in frontal view. As long as wide, maximum width at middle, narrowed in front of anterior angles. Anterior margin slightly bisinuate. Reflexed lateral border rounded from anterior angle to posterior setigerous puncture, extended to basal constriction as obtuse vault. Lateral channel fine, flattened posteriorly. Proepisternum moderately tumid posterolaterally, distinctly elongated. Anterior angles obtuse-angled but marked. Anterior transverse line flat, indistinct. Median line conspicuously deep in whole length, reaching level of anterior transverse line. Surface with fine transverse lateral wrinkles anteriorly and scattered minutely stuck punctures. Ringlike flange acute, slightly broader as deep channel of constriction.

Elytron (Fig. 19): Disc flattened in anterior half. Distinctly elongate, subelliptical. Margin nearly stright in basal half but diverging, hyperbolic in apical third. Maximum width at middle. Base truncated slightly convex to suture. Marginal channel broad, fold-like carina at apex indistinct; reflexed margin conspicuous from humeral tooth to apex. Humeral tooth moderately developed, situated in extended projection of 7th interval, turning dorsally and backwards. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus and a smaller one at declivity of second interval. Scutellar stria indistinct, fine carina laterally to scutellar stria. Stria 1 and 2 deep on disc, 3 to 5 moderately deep, punctuate, other striae developed as rows of punctures. Intervals 1 to 6 moderately convex, other more flattened, 8th forming obtuse carina in apical third, 3rd with 19, 5th with 15, and 7th with 3-4 setigerous punctures situated at middle; setae of 7th interval situated in apical half. First stria reaching apex, 1-6 ending abruptly before apical obtuse vault-like carina of 8th interval.

Ala: Reduced, length and width two thirds of elytron, each.

Lower surface: Proepisternum with indistinct reticulation, indistinct submarginal furrow in anterior quarter, furrow between prosternum and proepisternum distinct, conspicuously deep in basal 2 thirds. Terminal segment of abdominal sternite with indistinct transverse striolation apically.

Protibia: Lateral upper spine stout, turned moderately ventrally; movable spur as long as spine, nearly straight. Praeapical lateral denticles of same size.

♂: *Aedeagus* unknown.

♀: *Stylomere* (Fig. 157): Small, broad at base.

Distribution: Known from the type locality in Bali, Indonesia (Fig. 182).

Etymology: The name refers to the reduced palpi.

GROUP *interpunctatus*

Diagnostic combination of characters: Species of this group may be distinguished by the following combination of characters: Small sized; wings of clypeus rounded anteriorly, eyes flattened though slightly reduced, distinct reticulation present on frons of the head posterior keel, antennae moniliform, labrum with regular transverse reticulation; pronotum flattened in lateral view, maximum width at middle, posterolateral tumidity of the proepisterna moderately developed, size of flange bigger, form convex and channel of constriction broad; shape of elytra parallel, setae present on intervals 3 and 5. Aedeagus relatively small in comparison to body size.

Trilophus interpunctatus Putzeys, 1866

Figs 1, 48, 95-98, 162

? *Phreoryctes debilis* Schmidt-Göbel, 1846: Tab. III, 6 (*Dyschirius debilis* Schmidt-Göbel, Csiki, 1927: 524);

Dyschirius interpunctatus Putzeys, 1866: 97;

Dyschirius interpunctatus Putzeys; PUTZEYS 1878: 174;

Oxydrepanus interpunctatus Putzeys; ANDREWES 1926: 378;

Trilophus interpunctatus Putzeys; ANDREWES 1927: 265;

Trilophus interpunctatus Putzeys; ANDREWES 1929: 383;

Trilophus interpunctatus var. *schmidtii* Putzeys; ANDREWES 1930: 356.

Trilophus interpunctatus Putzeys; JEANNEL 1957: 140.

MATERIAL EXAMINED.

A. Type material. Lectotype (by present designation): ♀. Labels: yellow, small, D. *interpunctatus*, Ind. Bor. Lc. Chd. / grey, *Dyschirius interpunctatus* Putz dét. J. Putzeys / brown Soc. Ent. Belg. Coll. Putzeys / white, red, Syntype / white, *Trilophus interpunctatus* Putz. cotype, H.E. Andrewes 1928 (IRSNB).

Comments: PUTZEYS description (1867: 98) is based on 2 specimens from "Inde boréale" (North of India) of which one is available at IRSNB. This specimen was designated as the lectotype. According to ANDREWES (1929) the other one should be at MNHP but could not be located.

B. Other material. 5♂, 2♀, Nepal, Chitwan Nat. Park, Saura, 22.-26.V.1990, leg. S. Bily (CBL/CBA); 1♂, 1♀, Nepal, Terai, Sauraha-Chitwan 20.-15.V.1992, leg. J. Moravec (NHMB/CBA).

DIAGNOSIS: A small oblongo-elongate species with parallel margin and small channel of the elytra, and setigerous punctures present on the intervals 3 and 5 of the elytra. Distinguished from the related species *T. appulsus* n. sp. and *T. parallelus* n. sp. by the subparallel margin of the pronotum, the moniliform antennae, the flattened intervals, the less impressed striae on the elytron, the more slight convexity of the eyes, and the elongated keel on the frons of the head.

REDESCRIPTION

Measurements: Length 2.23 - 2.58 mm ($x = 2.38$ mm*), width 0.68 - 0.76 mm ($x = 0.74$ mm*), ratio length/width of pronotum 1.03 - 1.08 ($x = 1.06$ *), ratio length/width of elytra 1.74 - 1.80 ($x = 1.77$ *); (*n = 10).

Colour: Head, pronotum, ventral surface, and elytra light-brown. Palpi, antennae, middle and hind legs yellowish.

Head (Fig. 1): A quarter smaller than pronotum. Clypeus, wings, supraantennal plates finely margined; Clypeus regularly excised anteriorly, wings rectangular but rounded, divided from supraantennal plates by slight notches; supraantennal plates convex; tubercle on clypeus falling steeply in posterior quarter, keel on vertex fine but sharp, not so elevated but longer than elevation of tubercle. Clypeus and frons divided from supraantennal plates by deep and broad longitudinal furrows. Furrows diverging posteriorly, with flat 2nd foveae at mid-eye level, fine carina between supraorbital setae and frons at each side reaching from mid-eye to hind-eye level. Frons convex, a bit dull, with longitudinal reticulation. Neck constriction at posterior eye level, moderately interrupted at middle. Eyes slightly convex, somewhat flattened, eye-index 2.2. Genae not as high as eyes, enclosing eyes in posterior quarter. Labrum slightly excised anteriorly. Mandibles acute. Antennae short, segment 10 reaching posterior setigerous puncture of pronotum, segment 5 to 10 moniliform.

Pronotum (Figs. 1, 48): Lateral view: anterior third flattened, posterior part slightly convex, only moderately convex at basal constriction; frontal view: flattened at median line, moderately convex laterally; sides subparallel, slightly longer than wide, maximum width at middle, narrowed regularly at anterior angles. Anterior margin bisinuate. Reflexed lateral border and channel fine in total length, slightly convex at middle, extended to basal constriction as obtuse vault. Proepisternum moderately tumid posterolaterally. Anterior angles obtuse rounded. Anterior transverse line flat, indistinct, reaching nearly up to middle. Median line distinct, sharp. Surface partly covered with indistinct reticulation and few fine transverse wrinkles laterally. Basal constriction conspicuously deep. Ringlike flange fine, slightly convex, 1.5 times broader as channel of constriction.

Elytron (Fig. 1): Anterior two thirds explanate, transverse depression intimated. Oblongo-elongate, sides parallel at middle. Maximum width at middle. Base truncated subrectangularly. Marginal channel narrow; reflexed margin fine but distinct from humeral tooth to apex, forming distinct fold-like carina at apex, crossing marginal channel completely. Humeral tooth fine, situated in extended projection of 7th interval. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 6th interval and a smaller one at declivity of second interval. Stria 1 moderately, others slightly impressed, punctuate, other striae developed as rows of partly connected slightly impressed punctures. Intervals 1 to 4 slightly convex, others flattened. 8th interval forming obtuse overhanging carina in apical third, covering half of marginal channel. Interval 3 and 5 with series of 18 to 14 setigerous punctures, approaching inner stria. First stria reaching apex, all others ending on apical declivity.

Ala: Fully developed.

Lower surface: Proepisternum with submarginal furrow in anterior quarter fine but distinct, furrow between prosternum and proepisternum distinct, adjoining anterior margin. Terminal segment of abdominal sternite with distinct transverse reticulation in both sexes.

Protibia (Fig. 1): Lateral upper spine turned distinctly ventrally and slightly outward; movable spur a bit shorter than spine, slightly turned ventrally.

♂: *Aedeagus* (Figs. 95, 98): Small, median lobe conspicuously arcuate at middle, slender in apical half. Apex spatulate, explanate, slightly convex. Endophallus with bristles and about 7 teeth. Parameres (Figs. 96, 97), bisetose (in one of the specimens from Nepal with additional fine pilus at apex).

♀: *Stylomere* (Fig. 162): Broadened basally, slender mesially, elongate, with acute elongate apex.

Distribution: South of central Nepal (Fig. 183). The lectotype is labelled "North of India", not displayed in Fig. 183.

Variations: 1 ♀, Kierpur, Purnea dist., Bihar, 19.IX.19915, C. Pavia, "among roots of Cannas", Indian Museum Calcutta, "*Trilophus interpunctatus* Putz. compared with type H.E.A.", H.E. Andrewes Coll., "figured specimen F.B.I." (BMNH). The specimen resembles in many characters the lectotype of *T. interpunctatus*. However, its margin of the elytron is a bit broader and the sides are not exactly as parallel as the other specimens. In addition, the styli are not as slender as in the lectotype. Without male from this locality, a clear decision about the status can not be given.

Remarks: *Phreoryctes debilis* Schmidt-Göbel was described by an illustration (SCHMIDT-GÖBEL 1846, Tab. III, 6) without written description, and synonymized by PUTZEYS (1878) with *Dyschirius interpunctatus* Putzeys. However, the drawing could refer to a *Syleter*, *Trilophidius*, *Dyschirius*, or even an unusual *Clivina*. Based on his investigation, Andrewes found that the material serving Schmidt-Göbel for the illustration is lost. Therefore I share Andrewes' opinion "there seems now to be no possibility of deciding what the species is" (ANDREWES 1929, p. 415).

***Trilophus appulsus* n. sp.**

Figs 11, 44, 93, 94

Type material: Holotype: ♂, Pakistan sept., envs. Punjab, Rawalpindi Lake, 3.IV.1986, debris alluvion, leg. S. Vit. (MHNG).

Paratype: 1 ♂, same data as holotype (CBA).

DIAGNOSIS: A small oblongo-elongate species with parallel margin and small channel of the elytra, and setigerous punctures present on the intervals 3 and 5 of the elytra. Distinguished from the related species *T. interpunctatus* Putzeys and *T. parallelus* n. sp. by the slightly reduced but convex eyes, the lateral margin of the elytra which is subserate, the reduced wings, and the missing apical fold-like carina in the channel of the elytron. In contrast to *T. parallelus*, the aedeagus is spatulate at the apex, the intervals on the elytron are moderately convex, and the striae are moderately deep. In contrast to *T. interpunctatus* the antennae are elongate, the pronotum is regularly rounded at sides with the anterior angles distinctly marked. Distinguished from all other species by the row of setae on the 3rd interval of the elytra which is extended to the tip of the apex.

DESCRIPTION

Measurements: Length 2.27/2.45 mm; width 0.72/0.77 mm; ratio length/width of pronotum 1.08/1.12; ratio length/width of elytra 1.74.

Colour: Head, pronotum, ventral surface, elytra, and front legs brown. Palpi, antennae, intermediate and hind legs, base and tip of apex of elytra yellow-brown.

Head: A quarter smaller than pronotum. Clypeus, wings, supraantennal plates distinctly margined; clypeus moderately excised anteriorly, wings obtusely projecting, acute at tip, devided from supraantennal plates by obtuse-angled notches; supraantennal plates vaulted; keel on vertex sharp, as long as elevation of tubercle. Clypeus and frons devided from supraantennal plates by deep and broad longitudinal furrows with 2nd fovea, each. Furrows diverging posteriorly, turning mesially before neck. Carina between furrow and frons at each side starting at mid-eye level, ending at posterior eye-level. Frons convex, with intimated median impression behind keel and longitudinal reticulation. Neck constriction at posterior eye-level flat, broadly interrupted at middle. Eyes slightly reduced but distinctly convex, eye-index 2.2, two fifths of eyes enclosed by genae. Genae not tumid, not as high as eyes, unit of eye and gena forming regular rounded vault. Labrum straight anteriorly, indistinctly bisinuate. Mandibles slender. Antennae long, reaching over basal constriction of pronotum, segment 5 to 10 submoniliform.

Pronotum (Figs. 11, 44): Lateral view: anterior third flattened, slightly convex at middle, vaulted and steeply declivous in posterior quarter to basal constriction; frontal view: flattened at middle, moderately and regularly convex laterally. Sides rounded. Longer than wide, maximum width at middle. Anterior margin slightly bisinuate. Reflexed lateral border evenly rounded up to posterior setigerous puncture, extended to basal constriction as fine line and obtuse vault. Lateral channel small anteriorly, broader and flattened to posterior setigerous puncture. Proepisternum moderately tumid posterolaterally. Anterior angles marked. Anterior transverse line indistinct, flat. Median line sharp, deeper posteriorly. Surface with few transverse wrinkles. Ringlike flange convex, twice as broad as channel of constriction. Constriction not deep.

Elytron (Fig. 11): Explanate on disc. Oblongoelongate, sites rounded at humerus and at apical third, nearly stright and parallel in anterior half. Maximum width at middle. Base truncated subrectangularly. Marginal channel moderately small; fine serration at reflexed margin just traceable at 50 X in anterior two thirds, margin distinct from humeral tooth to apex, no fold-like carina at apex. Humerus rounded, humeral tooth fine, slightly projecting, situated in extended projection of 7th interval. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 6th interval and a smaller one situated in extended projection of 2nd interval, adjoining 2nd stria. Stria 1 and 2 conspicuously deep, 3 and 4 moderately deep, all punctuate, 6 and 7 developed as rows of partly connected punctures, striae not reaching declivity of elytron at base. Intervals 1 to 4 moderately convex, suture impressed at base, 8th forming obtuse slightly overhanging carina in apical third, hardly covering marginal channel. Interval 3 with series of 15 setigerous punctures, approaching inner stria, interval 5 with 13 setigerous punctures situated at middle. First stria conspicuously deep apically, all others ending at beginning of apical declivity.

Ala: Reduced, length and width two thirds of elytron, each.

Lower surface: Proepisternum with submarginal furrow in anterior quarter,

fine, furrow between prosternum and proepisternum profound, bending to anterior angle as fine line, adjoining submarginal furrow. Terminal segment of abdominal sternite with distinct isodiametric to irregular reticulation at middle (in females unknown).

Protibia: Movable spur as long as spine.

♂: *Aedeagus* (Figs. 93, 94): Small, median lobe slender, slightly arcuate and flattened toward apex; apex spatulate, convex. Endophallus with bristles. Parameres (Fig. 93), bisetose.

♀: *Stylomere* unknown.

Distribution: The species was collected from floated detritus in Pakistan at the Rawalpindi Lake (Fig. 183).

Etymology: The species was flooded to the shore which is expressed by the name.

***Trilophus parallelus* n. sp.**

Figs 10, 43, 90-92, 161

Type material: Holotype: ♂, India, Meghalaya, Darugiri, Garo Hills, 450 m, 19.V.1976, leg. W. Wittmer, C. Baroni Urbani (NHMB).

Paratypes: 1 ♂, 3 ♀, same data as holotype (NHMB/CBA); 1 ♀, same data as holotype but labelled "Coll. Dostal Wien" (CDW). 1 ♂, Barway, P. Cardon / *Phreoryctes interpunctatus* Putz, det. M. Maindon 1910 (IRSNB).

Diagnosis: A small oblongo-elongate species with parallel margin and small channel of the elytra, and setigerous punctures present on the intervals 3 and 5 of the elytra. Distinguished from the related species *T. interpunctatus* Putzeys and *T. appulsus* n. sp. by the stick-like apex of the aedeagus, the isodiametric reticulation on the frons of the head, the distinctly convex intervals, and the conspicuously impressed first 2 striae on the elytron.

DESCRIPTION

Measurements: Length 2.46 - 2.64 mm ($x = 2.57$ mm*), width 0.75 - 0.82 mm ($x = 0.79$ mm*), ratio length/width of pronotum 1.00 - 1.06 ($x = 1.02$ *), ratio length/width of elytra 1.79 - 1.84 ($x = 1.82$ *); (*n = 6).

Colour: Head, pronotum, ventral surface, and elytra brown. Palpi, antennae, intermediate and hind legs yellow-brown, yellow spots in some specimen at base and apex of elytron, supraantennal plates and wings of clypeus yellowish transparent.

Head: A quarter smaller than pronotum. Clypeus, wings, supraantennal plates finely but distinctly margined; Clypeus regularly excised anteriorly, wings obtuse angled, devided from supraantennal plates by slight notches; supraantennal plates convex, keel-like prolonged to hind-eye level; tubercle on clypeus falling in posterior third, keel on vertex sharp, as elevated and as long as elevation of tubercle. Clypeus and frons devided from supraantennal plate by deep longitudinal furrows. Furrows diverging posteriorly, with 2 foveae, posterior fovea with flat granula, interrupting furrow conspicuously, fine carina between supraorbital setae and frons at each side reaching from furrow at mid-eye to hind-gena level. Frons convex, with isodiametric reticulation. Neck constriction at posterior eye level, moderately interrupted at middle.

Eyes slightly reduced but distinctly convex, eye-index 2.15. Genae not as high as eyes, enclosing eyes in posterior fifth. Labrum slightly excised anteriorly. Mandibles acute. Antennae long, reaching over basal constriction of pronotum, segment 5 to 10 submoniliform.

Pronotum (Figs. 10, 43): lateral view: anterior third flattened, middle part slightly convex, moderately convex to basal constriction; frontal view: moderately and regularly convex; sides rounded, as long as wide, maximum width slightly behind middle, narrowed regularly at anterior angles. Anterior margin bisinuate. Reflexed lateral border evenly rounded, extended over posterior setigerous puncture by diameter of puncture, extended to basal constriction as fine but distinct submarginal furrow and obtuse vault. Lateral channel deep, broader and flattened posteriorly. Proepisternum moderately tumid laterally in posterior part, distinctly visible from above. Anterior angles marked. Anterior transverse line flat, indistinct, visible laterally. Median line distinct, sharp. Surface with few transverse wrinkles. Basal constriction deep. Ringlike flange convex, twice as broad as channel of constriction.

Elytron (Fig. 10): Anterior two thirds explanate, transverse depression intimated. Oblongo-elongate, sites parallel at middle. Maximum width at middle. Base truncated rectangularly. Marginal channel moderately small; reflexed margin distinct from humeral tooth to apex, fold-like carina at apex indistinct, not crossing marginal channel. Humeral tooth fine, situated in extended projection of 7th interval. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 5th interval and a smaller one at declivity of second interval adjoining stria one. Stria one and 2 conspicuously, 3 and 4 moderately impressed, punctuate, others developed as rows of partly connected moderately impressed punctures. Intervals 1 to 3 distinctly convex, 4 to 6 moderately convex, 8th interval forming obtuse slightly overhanging carina in apical third, hardly covering marginal channel. Interval 3 with series of 15 to 17 setigerous punctures, approaching inner stria, interval 5 with 13 to 15 setigerous punctures situated at middle. Setigerous punctures of interval 3 reaching up to apical tip of elytron. First stria conspicuously deep apically, all others ending apically on obtuse vault-like carina of 8th interval.

Ala: Fully developed.

Lower surface: Proepisternum with submarginal furrow in anterior quarter distinct, furrow between prosternum and proepisternum profound, adjoining anterior margin. Terminal segment of abdominal sternite: male with transverse reticulation in apical two thirds, female with indistinct transverse reticulation interrupted at middle by distinct isodiametric reticulation.

Protibia: Lateral upper spine turned distinctly ventrally and slightly outward; movable spur shorter than spine, slightly turned ventrally.

♂: *Aedeagus* (Figs. 90, 92): Small, median lobe arcuate at middle, slender in apical third. Apex flattened but not spatulate, slightly convex. Endophallus with bristles and 3 teeth apically. Parameres (Figs. 90, 91), bisetose.

♀: *Stylomere* (Fig. 161): Slender, conspicuously arcuate.

Distribution: Found in Meghalaya in the western located Garo Hills (Fig. 183).

Variation: In some of the females the outline of the elytra is very slightly diverging posteriorly. However, the appearance is still subparallel.

Remarks: The locality "Barway" from one of the paratypes could not be interpreted.

Etymology: The name is derived from the parallel shape of the elytra.

GROUP *schmidtii*

Diagnostic combination of characters: Species of this group may be distinguished by the following combination of characters: Medium sized; wings of clypeus rounded anteriorly, eyes fully developed, genae small, distinct reticulation present on frons of the head posterior keel, antennae elongate, labrum with regular transverse reticulation; maximum width of pronotum at middle, posterolateral tumidity of the proepisterna moderately developed, form of flange acute and channel of constriction narrow; maximum width of elytra behind middle, shape in lateral view transversally depressed, setae present on intervals 3 and 5.

Trilophus schmidtii Putzeys, 1877

Figs 2-5, 12, 45, 99-102, 163

Dyschirius schmidtii Putzeys, 1877: 41;

Oxydrepanus schmidtii Putzeys; ANDREWES 1926: 378;

Trilophus interpunctatus var. *schmidtii* Putzeys; ANDREWES 1927: 265;

Trilophus interpunctatus var. *schmidtii* Putzeys; ANDREWES 1929: 384;

Trilophus interpunctatus var. *schmidtii* Putzeys; ANDREWES 1930: 357.

MATERIAL EXAMINED

A. Type material. Lectotype (by present designation): ♂, labels: yellow, Calcutta Dhn. / yellow, small, D. schmidtii P. Calcutta Dhn. / grey, *Dyschirius schmidtii* Putz dét. J. Putzeys / brown Soc. Ent. Belg. Coll. Putzeys / white, red, Syntype / white *Trilophus interpunctatus* P. v. *schmidtii* Putz. cotype H.E. Andrewes 1928 (IRSNB).

Paralectotype (by present designation): 1 ♀. Labels: yellow, small, Calcutta Dhn. / grey, *Dyschirius schmidtii* Putz dét. J. Putzeys / brown Soc. Ent. Belg. Coll. Putzeys / white, red, Syntype / white *Trilophus interpunctatus* Putz. V. Schmidtii Putz. Andrewes dét. (IRSNB).

Comments: PUTZEYS (1877: 41) based his description on 4 specimens from Calcutta. Three of the specimens are available. However, they include two species. One male and one female are designed as lecto- and paralectotype of *T. schmidtii* Putzeys because the specimens resemble more to the short description of Putzeys. The other male could be identified as *T. birmanicus* Bates. It is assumed that the 4th specimen went back into the collection Dohrn. This collection was deposited in the museum Stettin and lost during the 2nd world war (HORN *et al.* 1990).

B. Other material. 7♂, 12♀, 81 specs., S-Vietnam, Nam-Cat Tien Nat. Park, 1.-15.V.1994, leg. P. Pacholatko & L. Dembicki (NHMW/CBA); 3 specs., same data but 24.-27.V.1996 (CBL/CBA); 4♂, 7♀, 350 specs., same data but leg. Zacharda (CBL/CBA); 5 specs., same data but leg. P. Pacholatko (CBB/CBA); 1♂, Thailand, Chiang Rai, 10 km W Wiang Pa Pao, Ban Huay Ya Sai, 780 m, 28.I.1988, leg. P. Schwendinger (MHNG); 1♂, Thailand, NE Bangkok, Khao Yai Nat. Park, 750 - 850 m, 26.XI.-3.XII.1985, leg. I. Löbl, D. Burckhardt (MHNG); 1♂, 1♀, same data but E Heo Suwat Waterfalls, 800 - 900 m, 1.XII.1985, (MHNG); 1♀, NW Thailand, Chom Thong, 24.-27.IV.1991, leg. J. Horák (CDW); 1♀, Thailand, Thanon Thong Chai, Fang, 19°55'N, 99°12'E, 300 m, 25.V.1991, leg. D. Král & V. Kuban (NHMB); 1♀, same data but Lansang, 16°48'N, 98°57'E, 500 m, 18.-24.IV.1991 (NHMB).

DIAGNOSIS: A small to medium sized species with subelongate and transversally depressed elytra, moderately tumid proepisterna, complete median line of the pronotum, and setigerous punctures present on intervals 3 and 5 of the elytra. Distinguished from the related species *T. birmanicus* and *T. tonkinensis* by the smaller size, and the flat and small anterior transverse line which is distinct at the edges of the pronotum only. Moreover, it is distinguished by the apex of the aedeagus which is stick-like in *T. birmanicus* and conspicuously arcuate in *T. tonkinensis*.

REDESCRIPTION

Measurements: Length 2.38 - 2.90 mm ($x = 2.58$ mm*), width 0.73 - 0.93 mm ($x = 0.80$ mm*), ratio length/width of pronotum 1.0 - 1.09 ($x = 1.04$ *), ratio length/width of elytra 1.69 - 1.79 ($x = 1.77$ *); (*n = 30).

Colour: Head, pronotum, ventral surface, and elytra brown. Mouthparts, antennae, intermediate and hind legs yellow, front legs yellow-brown.

Head (Figs. 2-5): A quarter smaller than pronotum. Clypeus, wings, supra-antennal plates finely margined; Clypeus regularly excised anteriorly, wings obtuse angled, devided from supraantennal plates by slight notches; supraantennal plates convex; keel on vertex sharp, as long and as elevated as tubercle. Clypeus and frons devided from supraantennal plates by deep and broad longitudinal furrows. Furrows diverging posteriorly, with 2nd distinct fovea, each, indistinct transverse carina in some specimens posterior tubercle. Short carina between furrow and frons at each side reaching from mid-eye level to hind supraorbital seta. Frons convex, with fine longitudinal reticulation, more distinct at level of keel, slight median impression behind keel in some specimens. Slight neck constriction at posterior eye level, moderately interrupted at middle. Eyes large, convex, eye-index 1.8, posterior sixth enclosed by genae. Genae short, developed as small groin. Labrum broad, moderately excised anteriorly. Antennae ending before reaching basal constriction of pronotum, segment 4 to 10 elongate.

Pronotum (Figs. 12, 45): lateral view: anterior four fifths slightly convex, regularly convex in posterior fifth to basal constriction; frontal view: regularly convex. As long as wide, maximum width at middle, narrowed in anterior third. Anterior margin slightly convex. Reflexed lateral border evenly rounded from anterior angle to posterior setigerous puncture, extended to basal constriction as submarginal furrow. Proepisternum moderately tumid posterolaterally. Anterior angles distinct, obtuse. Anterior transverse line flat, more distinct laterally. Median line distinct, fine at middle, deeper posteriorly. Surface with few fine transverse wrinkles. Basal constriction broad. Ringlike flange subacute, twice as broad as channel of constriction.

Elytron (Fig. 12): Anterior half transversally depressed. Subelongate, sites rounded, thought nearly straight in anterior half but diverging. Maximum width behind middle. Base truncated obliquely. Marginal channel moderately broad, fold-like carina at apex incomplete; reflexed margin distinct from humeral tooth to apex. Humeral tooth moderate, situated in extended projection of 7th interval, not projecting. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 6th interval (approaching 5th stria) and a smaller

one adjoining 2nd stria. Scutellar stria intimated. Stria 1 conspicuously deep, stria 2 to 5 deep, punctuate, other striae developed as rows of deep and partly connected punctures. Intervals 1 to 5 moderately convex, other more flattened. 8th interval forming obtuse overhanging carina in apical quarter, covering half of marginal channel. Interval 3 with series of 12 to 16 setigerous punctures, approaching more or less inner stria, interval 5 with 11 to 14 setigerous punctures situated at middle. First stria reaching apex, all others ending on apical declivity.

Ala: Fully developed.

Lower surface: Proepisternum with submarginal furrow visible in anterior quarter, furrow between prosternum and proepisternum distinct, adjoining anterior margin. Terminal segment of abdominal sternite with fine transverse reticulation in apical half.

Protibia: Lateral upper spine turned distinctly ventrally and slightly outward.

♂: *Aedeagus* (Figs. 99, 102): Median lobe conspicuously arcuate at middle, apical half more straight, moderately broadened in lateral view, apex spatulate. Endophallus with bristles and teeth. Parameres (Figs. 100, 101), bisetose.

♀: *Stylomere* (Fig. 163): Broad, moderately arcuate.

Distribution: The species is found in West Bengal, South Vietnam, and Thailand (Fig. 184).

Remarks: In the 455 specimens investigated from South Vietnam variability was observed mostly in the outline of the pronotum and elytra: In a few specimens there is a trend to be more or less parallel at the sides. Some of the specimens from Thailand exhibit an indistinct transverse carina on the frons of the head pointing to the posterior end of the keel.

Doubtful specimens: 1 ♂, Sarda, Bengal, F.W.C., "Trilophus interpunctatus Putz. H.E.A." (BMNH): The apex of the aedeagus is more arcuate than in all other specimens of *T. schmidtii*. This specimen was received without head and with very damaged legs.

Trilophus birmanicus Bates

Figs 13, 46, 103-106, 164

Oxydrepanus birmanicus Bates, 1892: 283;

Oxydrepanus schmidtii Putzeys; ANDREWES 1926: 378;

Trilophus interpunctatus Putzeys; ANDREWES 1927: 265;

Trilophus interpunctatus Putzeys; ANDREWES 1929: 383;

Trilophus interpunctatus Putzeys; ANDREWES 1930: 356.

MATERIAL EXAMINED

A. Type material. Lectotype (by present designation): ♂, labels: light brown, Birmania, Katha, Fea, 11.6.1885 / light brown, red, Typus / light brown, birmanicus Bates / red brown, *Oxydrepanus birmanicus* (es. tip.) Bates / light brown, *Oxydrepanus Birmanicus* Bates / red, Museo Civ. Genova / red, Syntypus *Oxydrepanus birmanicus* Bates 1892 (MCSN).

B. Other material. 1 ♂, labels: yellow, small, Calcutta / grey, *Dyschirius schmidt* Putz dét. J. Putzeys / brown Soc. Ent. Belg. Coll. Putzeys / white, red, Syntype (IRSNB); 1 ♀, labels: Schmidt Putz, Birma, Helf. / Ex. Musaeo L. Fairmaire 1896 (MNHP); 1 ♀, India, Meghalaya, Khasi Hills, ss/Cherrapunjee, 1200 m, 26.X.1978, leg. I. Löbl, C. Besuchet (MHNG); 1 spec. (received with an empty abdomen), labels: Dysch. Schmidt Putz Birma / Ex. Musaeo L. Fairmaire 1896 (MNHP); 1 ♀, Thailand, NE Bangkok, Khao Yai Nat. Park, E Heo Suwat Waterfalls, 800-900 m, 1.XII.1985, leg. I. Löbl, D. Burckhardt (MHNG); 1 ♂, India, Bowring 63.47*, "*Trilophus interpunctatus* v. *schmidt* Putz. compared with type H.E.A." (BMNH); 2 ♀, India: Assam, Jorhat, Tea soil, 1970, C.I.E. A3612, 502/6, pres. By Com. Inst. Ent. B M 1970-I, det. *Trilophus interpunctatus* var *schmidt* Putz. (BMNH); 2 ♀, Assam, Manas, 200 m, 22.X.1978, leg. I. Löbl, C. Besuchet (MHNG/CBA); 4 ♂, 1 ♀, Assam, Kaziranga, 75 m, 7.-9.V.1976, leg. W. Wittmer, C. Baroni Urbani (NHMB/CBA); 1 ♂, same data but nat. pres. 12.-15.V.1991, leg. St. Jakl, (CDW).

Comments: BATES (1892: 283) based his description on 2 specimens, one from northern Birma (Katha) and one from the south of Birma (Meetan, Tenasserim). The specimen from Katha is available and is designed as the lectotype. In the aedeagus dissected shrinking was observed. However, there was enough other material available. So, a realistic figure of the aedeagus can be given. Among the material investigated there is one of the 4 individuals serving PUTZEYS (1877) for the description of *Dyschirius schmidt* (specimen from IRSNB). As can be noticed by the confusion within the type series of *T. schmidt*, the species is difficult to distinguish by external characters but easily by the shape of the male genitalia: *T. schmidt* possesses a spatulate apex (comp. Figs. 99, 102) whereas the apex of the aedeagus of *T. birmanicus* is stick-like.

The species *birmanicus* Bates, synonymized by ANDREWES (1926, 1927, 1929, 1930) with *interpunctatus* Putzeys and *schmidt* Putzeys, is different. This conclusion can be drawn clearly from external characters as well as from characters of the aedeagus.

DIAGNOSIS: A big sized species with elongated and transversally depressed elytra, less tumid proepisterna, complete median line of the pronotum, and setigerous punctures present on intervals 3 and 5 of the elytra. Distinguished from the related species *T. schmidt* and *T. tonkinensis* by the small pronotum, the acuminate apex of the elytra, and by the stick-like apex of the aedeagus.

REDESCRIPTION

Measurements: Length 2.69 - 3.12 mm ($x = 2.85$ mm*), width 0.82 - 1.0 mm ($x = 0.98$ mm*), ratio length/width of pronotum 0.98 - 1.09 ($x = 1.03$ *), ratio length/width of elytra 1.68 - 1.78 ($x = 1.72$ *); (*n = 16).

Colour: Head, pronotum, ventral surface, elytra, and front legs red brown. Mouthparts, antennae, intermediate and hind legs yellow-brown.

Head: A quarter smaller than pronotum. Clypeus, wings, supraantennal plates distinctly margined; Clypeus minutely excised anteriorly, nearly straight, wings obtuse angled, devided from supraantennal plates by intimated notches; supraantennal plates convex; keel on vertex sharp, longer and less elevated as tubercle. Clypeus and frons devided from supraantennal plates by deep longitudinal furrows. Furrows diverging posteriorly, with distinctly broad 2nd fovea at front-eye level, short carina between furrow and frons at each side, arising at supraantennal plate and reaching nearly up to hind supraorbital seta, bending slightly mesially posteriorly. Frons convex, with isodiametric reticulation, more distinct posterior tubercle, slight median impression behind keel. Indistinct neck constriction at posterior eye level. Eyes large, voluminous,

hemisphaerically protruding, eye-index 1.8. Genae short, developed as small groin. Labrum broad, moderately excised anteriorly. Antennae reaching up to basal constriction of pronotum, segment 4 to 10 elongate.

Pronotum (Figs. 13, 46): lateral view: anterior three quarters slightly and regularly convex, moderately convex in posterior quarter up to basal constriction; frontal view: regularly convex, stronger convex laterally to marginal channel. Relatively small, longer than wide, maximum width at middle, narrowed in anterior third. Anterior margin slightly bisinuate. Reflexed lateral border evenly rounded from anterior angle to posterior setigerous puncture, extended distinctly over posterior setigerous puncture as submarginal furrow, furrow not reaching basal constriction. Proepisternum moderately tumid posterolaterally. Anterior angles distinctly marked, obtuse. Anterior transverse line flat but deeper laterally. Median line sharp, deeper posteriorly. Surface with few fine transverse wrinkles. Basal constriction broad. Ringlike flange acute, one half broader as channel of constriction.

Elytron (Fig. 13): Anterior half transversally depressed. Elongate, sites nearly straight in anterior half but slightly diverging. Maximum width slightly behind middle. Base truncated obliquely. Marginal channel moderately broad, fold-like carina at apex incomplete; reflexed margin distinct from humeral tooth to apex. Humeral tooth situated in extended projection of 7th interval, moderately projecting. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 6th interval (approaching 5th stria) and a smaller one adjoining 2nd stria. Stria 1 to 3 conspicuously deep, stria 4 to 7 moderately deep, punctuate. Intervals 1 to 6 moderately convex, 8th forming obtuse overhanging carina in apical quarter, covering half of marginal channel. Interval 3 with series of 15 to 19 setigerous punctures, situated at middle, interval 5 with 13 to 15 setigerous punctures approaching inner stria. First stria reaching apex, 2nd approaching apex, all others ending apically before obtuse vault-like carina of 8th interval.

Ala: Fully developed.

Lower surface: Proepisternum with submarginal furrow visible at anterior angle, furrow between prosternum and proepisternum distinct, not reaching anterior margin. Terminal segment of abdominal sternite with distinct transverse reticulation in apical two thirds.

Protibia: Lateral upper spine turned distinctly ventrally.

♂: *Aedeagus* (Figs. 103, 106): Median lobe conspicuously arcuate throughout, moderately broadened in lateral view, apex arcuate, stick-like. Parameres (Figs. 104, 105), bisetose, petioles not as elongated as in other species.

♀: *Stylomere* (Fig. 164): Broad basally, moderately arcuate.

Distribution: The species is found in NE India (Assam, Meghalaya), Birma, near Bangkok, and Calcutta (Fig. 184).

Variations: 1 ♀, labels: "Dysch. Schmidt Putz Birma" (MNHP): Clypeus more excised, wings moderately acute, elytron not so elongate, length 3.05 mm, width 0.95 mm.

Trilophus tonkinensis n. sp.

Figs 20, 47, 107-110, 165

Type material: Holotype: ♂, N Vietnam, Hanoi, 40 m, 29.X.1963, leg. T. Pocs, á la lumière, (HNHM).

Paratypes: all N Vietnam: 3♂, 3♀, 3 specs., same data as holotype, and 17 specs., same data but 2./3./4./29./30.X.1963, (HNHM/CBA); 2 specs., same data but 1.-10.XII.1963, leg. Manninger (HNHM); 1♂, 1 spec., same data but 11./15.XII.1971, leg. Gy. Topál (HNHM); 1 spec. Same data but 7.V.1987, leg. Matskási, Oláh, Topál, at light, (HNHM); 2 specs., same data but 21.V.-11.VI.1986, leg. J. Horák (CDW); 1♂, same data but 22.V.-10.VI.1986, leg. J. Macek (NHMB) 1♀, same data but 30.VI.1990, leg. A. Olexa (NHMB); 1♂, same data but 1909, Coll. A. Bonhoure, MAI, (MNHP); 1♂, 1♀, 8 specs., same data but Hotel Kim lien, collected on lamp, 28.-31.V.1966, Exp. Gy. Topál (HNHM/CBA); 1♂, 43 specs., Tuong linh near Phu ly, 24.-28.V.1966, collected on lamp, Exp. Gy. Topál (HNHM/CBA), 1 spec., same data but 19.-23.V.1966 (HNHM); 1♂, same data but 19.-23.V.1966, sifted from detritus (HNHM); 12 specs., same data but 19.-23.V. and 24.-28.V. 1966, collected on lamp, Exp. Gy. Topál (HNHM/CBA); 1♂, 5 specs., Xuan dinh NW of Hanoi, 26.-29.IV.1966, sifted litter, Exp. Gy. Topál (HNHM/CBA); 1♂, 2 specs., Prov. Nghe-An, Quy-chau, forêt pluv. Trop., semidecid., à la lumière, 25.VIII.1963, leg. T. Pocs (HNHM); 1 spec. Nguyen, Thai, Prov. Bac Thai, 40 m, 21°24'N, 105°50'E, at light, 23.V.1987, leg. Matskási, Oláh, Topál (HNHM); 2♀, Prov. Ha-Tinh. Hũông-Sôn, 150 m, forêt trop. Pluv., á la lumière, 15.VIII.1963, leg. T. Pocs (HNHM); 11♂, 15♂, Phu-Lang-Thuong, Indo Chine. Coll. Dussault, 1911 (NHMB/CBA); 1♂, same data but Song-Chay, 1908 (NHMB); 1♂, same data but Chien-Hoa, 1907 (NHMB); 1♂, 1 spec., Ninh Binh, Cuc Phuong, at light, 1.X.1986, leg. Mészáros, Oláh, Vásárhely (HNHM); 1♂, 1 spec., same data but 3.-10.V.1966, Exp. Gy. Topál (HNHM); 1 spec., same data but 12.-18.V.1966, sifted litter of forest (HNHM); 1 spec., Cuc-Phũông, Bông, jungle, at lamp, 11.-23.XII.1965, leg. T. Pocs (HNHM); 1 spec., Res. Cuc-Phũông, Dang, forêt tropic. Pluv., á la lumière, 200 m, 16.IX.1963, leg. T. Pocs (HNHM); 1♂, Tonkin, Hoa Binh, A. de Cooman, Coll. Ch. Alluaud, „Trilophus interpunctatus PUTZ. Det. Andrewes“ (MNHP); 1♂, 3♀, pr. Hanamninh, Namdinh, 14.VI.1985, leg. Vít. Kubán (NHMB/CBA); 1♀, Annam, Laos, wod., "Trilophus interpunctatus v. schmidt Putz. compared with type H.E.A." (HNHM).

DIAGNOSIS: A bigger sized species with oblongo ovate and transversally depressed elytra, moderately tumid and elongated proepisterna, complete median line of the pronotum, and setigerous punctures present on intervals 3 and 5 of the elytra. Distinguished from the related species *T. schmidt* and *T. birmanicus* by the stronger rounded lateral margin of the elytra, the lateral channel of the pronotum which is broader anteriorly, and by the conspicuously arcuate apex of the aedeagus.

DESCRIPTION

Measurements: Length 2.45 - 2.98 mm ($x = 2.72$ mm*); width 0.82 - 0.96 mm ($x = 0.88$ mm*); ratio length/width of pronotum 1.0 - 1.08 ($x = 1.03$ *); ratio length/width of elytra 1.68 - 1.78 ($x = 1.73$ *); (*n = 30).

Colour: Head, pronotum, ventral surface brown, elytra red-brown. Mouthparts, antennae, legs yellowish brown.

Head: A quarter smaller than pronotum. Clypeus, wings, supraantennal plates distinctly margined; clypeal margin nearly stright, wings obtusely projecting, devided from supraantennal plates by intimated notches; supraantennal plates vaulted, prolonged to mid-eye level as carina; keel on vertex sharp, as long and as elevated as tubercle of clypeus, reaching to middle eye-level. Transverse furrow crossing keel without interrupting. Clypeus and frons devided from supraantennal plates by deep and broad longitudinal furrows with 2nd distinct fovea, each. Carina between furrow

and frons at each side starting at mid-eye level, ending at hind eye level. Frons convex, with median impression behind keel and fine longitudinal reticulation. Neck constriction at posterior genae level intimated. Eyes well developed, protruding, eye-index 2.0, one sixth of eyes enclosed by genae. Genae inconspicuous, unit of eye and gena nearly hemisphaerically. Labrum slightly excised anteriorly. Antennae long, reaching nearly up to basal constriction of pronotum, segment 5 to 10 elongate.

Pronotum (Figs. 20, 47): Lateral view: anterior two thirds slightly flattened, convex in posterior third up to basal constriction; frontal view: moderately convex. Slightly longer than wide, more slender anteriorly, maximum width at middle. Anterior margin bisinuate, convex at middle. Reflexed lateral border evenly rounded up to posterior setigerous puncture, extended to basal constriction as obtuse vault. Proepisternum distinctly tumid posterolaterally. Anterior angles distinctly marked, slightly projecting. Anterior transverse line flat, intimated at extremities (elongated mesially in some paratypes). Median line conspicuously sharp, deeper posteriorly (in few paratypes indistinctly adjoining basal constriction). Surface with few fine transverse wrinkles. Ringlike flange acute, three times as broad as channel of constriction.

Elytron (Fig. 20): Transversally depressed in anterior third. Elongate, sites moderately convex. Maximum width behind middle. Base truncated convexly. Marginal channel broad, fold-like carina at apex incomplete; reflexed margin distinct from humeral tooth to apex. Humerus distinctly angled, humeral tooth sharply projecting, situated in extended projection of 6th stria. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 5th stria and a smaller one situated in extended projection of 2nd interval. Stria 1 to 4 conspicuously deep, 5 moderately deep, all punctuate, 6 and 7 slightly impressed, developed as rows of connected punctures. Intervals moderately convex, 8th forming obtuse overhanging carina in apical third, covering one third of marginal channel. Interval 3 with series of 15 to 19 setigerous punctures approaching inner stria, interval 5 with 12 to 16 setigerous punctures, situated at middle, punctures of both intervals situated more closely in basal third. First stria conspicuously deep and broad apically, 2nd elongate at apex, all others ending before apical declivity with decreasing length.

Ala: Fully developed. Most of the species were collected at light.

Lower surface: Proepisternum with submarginal furrow distinct in anterior third, furrow between prosternum and proepisternum profound. Slight flat fovea anteriorly below submarginal furrow. Terminal segment of abdominal sternite with transverse reticulation in apical half, indistinct in females.

Protibia: Movable spur nearly as strong as spine.

♂: *Aedeagus* (Figs. 107, 110): Median lobe arcuate and broadened at middle, flattened in apical half; apex spatulate, conspicuously convex. Endophallus basally with 3 groups of teeth and some bristles, another group of teeth at apical cup. Parameres (Figs. 108, 109), bisetose, basal petioles shorter.

♀: *Stylomere* (Fig. 165): Slender at base, strongly arcuate apically.

Distribution: The species is found in North of Vietnam at low altitude (Fig. 184).

Etymology: The name refers to the region the species is known to occur.

Remarks: In addition to the variation given in the description, the following was observed. In 5 of the 157 specimens, the lateral margin of the elytra exhibit traces of serrulation visible at a magnification of 60 X. 10% of the specimens show no median fovea on frons whereas in few specimens the fovea is indistinct. In 5 specimens the pronotum is slightly broader anteriorly.

GROUP **ellipticus**

Diagnostic combination of characters: Species of this group may be distinguished by the following combination of characters: Smaller sized; paler coloured, some species are yellow; wings of clypeus acute projecting, eyes more or less reduced, genae big and often as high as the eyes, keel on frons of the head elongated, distinct reticulation present posterior keel, antennae moniliform, labrum with regular transverse reticulation; posterolateral tumidity of the proepisterna moderately developed, size of flange small; shape of elytra more or less regularly elliptical, setae present on intervals 3 and 5, alae reduced (in *T. variabilis* polymorphous).

Trilophus schawalleri n. sp.

Figs 26, 54, 134-137, 171

Type material: Holotype: ♂, India, Assam, Manas, 200 m, 21.X.1978, leg. I. Löbl & C. Besuchet (MHNG).

Paratypes: 12♂, 7♀, 26 spec., same data as holotype (MHNG/CBA); 2♂, India, W. Bengal, Darjeeling dist., Singla and Teesta, 250 and 300 m, 10./17.X.1978 leg. I. Löbl & C. Besuchet (MHNG/CBA).

DIAGNOSIS: A very small species with subelliptical lateral margin of the elytra, and distinctly reduced eyes. In lateral view, the elytra are conspicuously convex. Distinguished from other members of the group by the very small size, the straight anterior margin of the pronotum, subserrate lateral margin of the elytra, and the laterally flattened aedeagus.

DESCRIPTION

Measurements: Length 2.03 - 2.33 mm ($x = 2.18$ mm*); width 0.67 - 0.77 mm ($x = 0.72$ mm*); ratio length/width of pronotum 1.0 - 1.09 ($x = 1.03$ *); ratio length/width of elytra 1.56 - 1.73 ($x = 1.65$ *); (*n = 30).

Colour: Head, pronotum, ventral surface, and elytra brown. Mouthparts, margin of supraantennal plates, base of elytra, legs yellow-brown. Antennae yellow.

Head: A third smaller than pronotum. Clypeus, wings, supraantennal plates distinctly margined; clypeus moderately and regularly excised anteriorly, wings obtusely projecting, devided from supraantennal plates by obtuse-angled notches; supraantennal plates vaulted, prolonged to mid-eye level as fine carina; keel on vertex sharp, longer as elevation of tubercle, reaching to mid-eye level. Clypeus and frons devided from supraantennal plates by deep longitudinal furrows. Furrows diverging posteriorly, with 2nd distinct fovea, each. Sharp carina between furrow and frons at each side starting at mid-eye level, ending at hind-eye level. Frons convex, with fine irregular to

isodiametric reticulation at both sides of keel, fine but distinct fovea behind keel. Neck constriction at posterior eye level, distinct and broad laterally, shallow at middle. Eyes distinctly reduced but convex, eye-index 2.6, a quarter of eyes enclosed by genae. Genae distinct, not as high as eyes, unit of eye and gena forming regularly rounded vault. Labrum moderately excised anteriorly. Antennae not short, segment 9 reaching up to posterior setigerous puncture of pronotum, segment 5 to 10 moniliform.

Pronotum (Figs. 26, 54): Lateral view: anterior two thirds moderately convex, conspicuously convex in posterior third up to basal constriction; frontal view: moderately and regularly convex. Slightly longer than wide, maximum width at middle, slightly convex at middle. Anterior margin straight. Reflexed lateral border slightly rounded at middle up to posterior setigerous puncture, extended to basal constriction as indistinct obtuse vault. Proepisternum moderately tumid posterolaterally. Anterior angles distinct. Anterior transverse line more distinctly approaching median line. Median line sharp, deeper posteriorly. Surface with minutely sticked punctures and some fine irregular transverse wrinkles. Ringlike flange convex, twice as broad as channel of constriction.

Elytron (Fig. 26): Convex on disc in lateral and frontal view. Outline sub-elliptical, humerus rounded, apex slightly retracted. Maximum width slightly behind middle. Base truncated convexly (subconvexly in some paratypes). Marginal channel moderately broad, fold-like carina at apex crossing channel completely; reflexed margin transparent yellowish, minutely serrate in anterior two thirds, margin distinct from humeral tooth to apex. Humerus indistinct, humeral tooth indistinct, situated in extended projection of 7th interval. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 5th stria and a smaller one situated in extended projection of 2nd interval. Stria 1 and 2 adjoining at basal setigerous puncture. Stria 1 to 3 conspicuously deep, 4 moderately deep, all punctuate, 5 to 7 developed as rows of partly connected punctures, 2nd to 7th shortened at base. Intervals slightly convex, suture impressed at base, 8th forming obtuse overhanging carina in apical fifth, covering a quarter of marginal channel. Interval 3 and 5 with series of 8 to 11 setigerous punctures, approaching inner stria. First stria conspicuously deep apically, all others ending on apical declivity. Interval 8 with carina at apex.

Ala: Reduced, length and width one half of elytron, each.

Lower surface: Proepisternum with submarginal furrow hardly visible in anterior quarter; furrow between prosternum and proepisternum distinct. Slight broad fovea anterior coxal cavities. Terminal segment of abdominal sternite with indistinct transverse reticulation, in apical half.

Protibia: Movable spur shorter than spine.

♂: *Aedeagus* (Figs. 134, 137): Median lobe slender, arcuate at middle; apex spatulate, convex. Endophallus with bristles and teeth, 2nd group of teeth at apical cup. Parameres (Figs. 135, 136), bisetose.

♀: *Stylomere* (Fig. 171): Moderately broadened at base, fine mesially and apically, acute, regularly arcuate.

Distribution: The species is found in Assam (Fig. 186).

Etymology: The species is dedicated to Dr. Wolfgang Schawaller who has collected numerous Scaritinae-material in the Himalayas.

Variations: 2♀, Nepal, Terhatum Dist., oberhalb Nessum, 1750 m, baumreiches Kulturland, 16. IX.1983, leg. J. Martens & Daams (SMNS); 1♀, O-Nepal, Tengpoche, Khumbu, 3470 m, 1979, leg. B. Bhakta (NHMB): In these specimen the frons of the head is nearly smooth and the fold-like carina in the marginal channel of the elytron is nearly invisible. In addition, the habitus resembles a bit to *T. serratulus* n. sp.: 1♂, Sikkim, Chuba Khola nr. Sintam, 25.IV.1977, leg. B. Bhakta (NHMB): The elytra of this specimen are dilated behind middle. Although the aedeagus is different the specimen can not be assigned to date.

***Trilophus variabilis* n. sp.**

Figs 21, 49, 111-117, 166

Type material: Holotype: ♂, Nepal, prov. Bagmati, Nagarjun forest near Kathmandu, 1650 m, 2.IV.1981, leg. I. Löbl. A. Smetana (MHNG).

Paratypes: 4♂, 5♀, same data as holotype (MHNG/CBA); 21♂, 15♀, same data as holotype but Gokarna Forest nr. Kathmandu, 1300 and 1400 m, 31.III.1981 and 20.X.1983, (MHNG/CNCI/CBA); 1♂, 1♀, 4 specs., Gokarna, wod, leg. H. Franz (NHMW/CDW/CBA); 1♀, same data as holotype but Burlang Bhanjyang, 2600 m, 5.IV.1981 (MHNG); 1♀, same data as holotype but Malemchi Khola nr. Malemchi, 2100 m, 15.IV.1991 (MHNG); 1♂, 3♀, same data as holotype but below Tarke Ghyang, 2600 m, 25.IV.1981 (MHNG/CBA); 2♀, same data as holotype but Chipling, 2300 m, IV.1981 (CNCI/CBA); 2♀, Distr. Kathmandu, Godwari, 1600 m, 31.III.1984, leg. I. Löbl (MHNG); 2♀, Kathmandu, Gokaruban and Godavari, 12.IV. and 25.V.1976, leg. W. Wittmer, C. Baroni Urbani (NHMB); 1♂, 2♀, 3 specs., Zentral-Nepal, Weg v. Pokhara z. Goropani, and Goropani, IX.-X.1971, leg. H. Franz (NHMW/CDW/CBA); 1♀, Z.-Nepal, Kini-Kakari, Helambu, 1980, leg. H. Franz (NHMW); 1♂, Umg. Dhampus b. Pokhara, wod, leg. H. Franz, (NHMW/CDW); 1♂, 2♀, Barabhise geg. Ting-Sang-La, wod, leg. H. Franz (NHMW/CDW); 2♂, 2♀, Nagarkotpedi, 1550 m, wod, leg. H. Franz, (NHMW/CDW/CBA); 2♂, 7♀, Zentral-Nepal, Chapagaon, Bordzobaray, wod, leg. H. Franz, (NHMW/CDW); 2♀, India, Meghalaya, Barapani Old Road, 1000m, 14.V.1976, leg. W. Wittmer, C. Baroni Urbani (NHMB/CBA).

DIAGNOSIS: A medium sized species with subelliptical margin, broad lateral channel of the elytra, and slightly reduced eyes. Distinguished from other members of the group by the elongate antennae, the stick-like apex of the aedeagus, and the accessory setae at the apex of the parameres.

DESCRIPTION

Measurements: Length 2.54 - 2.86 mm (\bar{x} = 2.75 mm*); width 0.77 - 0.93 mm (\bar{x} = 0.88 mm*); ratio length/width of pronotum 1.01 - 1.07 (\bar{x} = 1.04*); ratio length/width of elytra 1.66 - 1.87 (\bar{x} = 1.73*); (*n = 30).

Colour: Head, pronotum, elytron, ventral surface, and front legs middle-brown. Base of elytron with broad yellowish macula, small yellow spot at apex. Palpi transparent yellow. Antennae, intermediate and hind legs yellow.

Head: A third smaller than pronotum. Clypeus distinctly margined, wings and supraantennal plates finely margined, wings rectangular but rounded, with isodiametric reticulation; clypeus regularly excised anteriorly, wings projecting, notches between wings and supraantennal plates intimated by obtuse angles; supraantennal plates convex; keel on vertex sharp, as elevated and as long as elevation of tubercle. Clypeus

and frons devided from supraantennal plates by deep and broad longitudinal furrows. Furrows diverging posteriorly, with distinct 2nd fovea, each, carina between furrow and frons reaching from mid-eye level to hind supraorbital seta. Frons convex, with isodiametric reticulation on both sides of keel. Neck constriction at posterior eye level intimated, flat, broadly interrupted at middle. Eyes slightly reduced, moderately convex, eye-index 2.5, posterior quarter enclosed by genae. Genae slightly tumid, nearly as high as eyes, unit of eye and gena forming regular rounded vault. Labrum slightly excised anteriorly. Antennae reaching slightly over basal constriction of pronotum, segment 4 to 10 subelongate.

Pronotum (Figs. 21, 49): Lateral view: Anterior third somewhat flattened, middle part slightly convex, conspicuously convex in posterior third to basal constriction; frontal view: more convex at middle than laterally; longer than wide, maximum width at middle, regularly narrowed from maximum width to anterior setigerous punctures, more distinctly to anterior angles. Anterior margin straight. Reflexed lateral border rounded to anterior angle and to posterior setigerous puncture, nearly parallel to median line at middle, extended over posterior setigerous puncture by diameter of puncture, extended to basal constriction as fine line. Proepisternum moderately tumid posterolaterally. Anterior angles well marked by obtuse angle. Anterior transverse line intimated at extremities. Median line distinct, deeper posteriorly. Surface with some fine transverse wrinkles and microscopic isodiametric reticulation laterally, best visible at anterior angles. Ringlike flange acute, 1.5 times broader than channel of constriction.

Elytron (Fig. 21): Explanate in 2ndquarter of anterior half. Subelongate, subelliptical. Maximum width slightly behind middle. Base truncated rectangularly. Marginal channel broad, fold-like carina at apex crossing channel completely; reflexed margin conspicuous from humeral tooth to apex, minutely serrate in anterior two thirds. Humeral tooth moderate, situated in extended projection of 7th interval. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 6th interval and a smaller one at declivity of second interval. Stria 1 and 2 deep, stria 3 to 5 moderately deep, punctuate, other striae not impressed, developed as rows of partly connected finer punctures. Inner intervals moderately convex, 8th forming obtuse overhanging carina in apical third, covering a third of marginal channel. Interval 3 and 5 with series of 14 to 18 setigerous punctures, situated somewhat irregularly at middle of intervals. First stria reaching apex, all others ending before obtuse carina of 8th interval.

Ala: Polymorphous (see Tab. 1).

Lower surface: Proepisternum with submarginal furrow visible in anterior quarter as subtle line, furrow between prosternum and proepisternum distinct, not adjoining anterior margin. Terminal segment of abdominal sternite with distinct transverse reticulation in apical two thirds.

Protibia: Lateral upper spine turned conspicuously ventrally; movable spur shorter than spine, turned ventrally at apex.

♂: *Aedeagus* (Figs. 111, 114, 115): Median lobe totally arcuate, bisinuate in lateral view. Apex stick-like, with lateral furrow. Endophallus with spines. Apex of both parameres bi- to quadrisetose (Figs. 112, 113, 116, 117, variable, see Tab. 2).

♀: *Stylomere* (Fig. 166): Conspicuously broad towards base, moderately arcuate.

Distribution: The species is found all over Central Nepal (Fig. 186).

Etymology: The name focuses on the variability of the elytra and the male parameres.

Variations: 1 ♀, Nepal, Dhading Dist., unter Samari Banjyang, 1000 - 1300 m, 27.VII.1983, Kulturland, leg. J. Martens & W. Schawaller (SMNS): The elytra of the specimen are slender, more elongate, and nearly parallel laterally.

Comments: In this species, extraordinary variability can be observed mostly conspicuous in the alae, the outline of the elytra, and the parameres of the males: In most of the specimens, the length of the alae are two thirds of the elytra. Some specimens show alae having a length of three quarters of the elytra. In 3 specimens the alae are folded at the radial cell, and 3 specimens are fully winged (Tab. 2). Parallel to this variability the outline of the elytra is different: Specimens with shorter alae exhibit more apically dilated elytra whereas in specimens with longer alae the outline of the elytra is more parallel-elongate. Although none of the specimen was

TAB. 2

T. variabilis n. sp.. Size of wings in different subpopulations from Central Nepal (n = 69).

length*)	Wings status	♂	No. of specimens	♀
0.66	not folded	21		17
0.75	not folded	13		12
1.00	folded at radial cell	1		2
1.50	fully developed	0		3

*) elytron (= 1.0) served as relative measurement

TAB. 3

T. variabilis n. sp.. Number of setae at the apex of male parameres in different subpopulations from Central Nepal (n = 33)

No. of apical setae at parameres		No. of specimens
dorsal	ventral	
2	2	4
2	2(+1)*	3
2	3	8
2	4	1
3	2	5
3	3	6
3	3(+1)*	1
3	4	2
4	3	2
4	4	1

*) small seta additionally present

collected at light it is assumed that the species is still vagile and the different subpopulations are in contact. Variability is also present in the number of apical setae of the parameres but without relationship to that in the alae. In the 33 males investigated the number of setae varies from 2 to 4 (Tab. 3). The variation in the wing size and the apical setae of the parameres is equal for specimens among the subpopulations. On the other hand, the aedeagi did not exhibit such variation. Outline, internal structures, and apex are relatively homogenous.

***Trilophus ellipticus* n. sp.**

Figs 22, 50, 118-121, 167

Type material: Holotype: ♂, India, Meghalaya, Khasi Hills, Shillong, 1850 - 1950 m, 25.X.1978, leg. I. Löbl, & C. Besuchet (MHNG).

Paratypes: 8 specimens, same data as holotype; 11 spec., same data as holotype but Mawphlang, 1800 m. 28.X.1998 (MHNG / CBA); 3 spec., same data as holotype but Mawphlang, 1850 m, 15.V.1976, leg. W. Wittmer, U. Baroni Urbani (NHMB/CBA).

DIAGNOSIS: A medium sized species with regularly elliptical lateral margin and conspicuously broad lateral channel of the elytra, and distinctly reduced eyes. Distinguished from other members of the group by the pointed humeral tooth, the laterally intimated anterior transverse line and the anteriorly broadened lateral channel of the pronotum, and by the isolated posterior setigerous punctures. Distinguished from all other species by the conspicuously regular elliptical shape of the elytra.

DESCRIPTION

Measurements: Length 2.60 - 2.90 mm ($x = 2.74$ mm*); width 0.82 - 0.93 mm ($x = 0.88$ mm*); ratio length/width of pronotum 1.0 - 1.08 ($x = 1.04$ *); ratio length/width of elytra 1.61 - 1.76 ($x = 1.70$ *); (* $n = 23$).

Colour: Head, pronotum, elytron, and ventral surface dark-brown. Base of elytron with yellow spot, small indistinct spot at apex in some paratypes. Mouthparts, antennae, intermediate and hind legs yellow, front legs middle-brown. Supraantennal plates yellowish anteriorly.

Head: A third smaller than pronotum. Clypeus, wings, supraantennal plates distinctly margined; clypeus moderately and regularly excised anteriorly, wings rectangularly projecting, obtuse, devided from supraantennal plates by slight notches; supraantennal plates convex, carina-like prolonged to hind-eye level; tubercle on clypeus falling steeply in posterior half, keel on vertex sharp, as long and as elevated as tubercle, reaching to hind-eye level. Clypeus and frons devided from supraantennal plates by deep and broad longitudinal furrows. Furrows diverging posteriorly, with 2nd distinct fovea, each. Short carina between furrow and frons at each side starting at mid-eye level, ending before posterior supraorbital seta. Frons convex, with fine isodiametric reticulation up to neck, slight median impression behind keel in some paratypes. Neck with slight constriction at posterior eye level, broadly interrupted at middle. Eyes distinctly reduced, slightly convex, eye-index 3.3, posterior third enclosed by genae. Genae conspicuous, moderately tumid, nearly as high as eyes, unit of eye and gena forming regular rounded vault. Labrum slightly excised anteriorly. Antennae short, segment 10 ending at posterior setigerous puncture of pronotum, segment 5 to 10 moniliform.

Pronotum (Figs. 22, 50): lateral view: anterior four fifths moderately flattened, moderately convex in posterior fifth up to basal constriction; frontal view: moderately and regularly convex. As long as wide, maximum width at middle, more distinctly narrowed in anterior third. Anterior margin straight to slightly concave. Reflexed lateral border evenly rounded from anterior angle to posterior setigerous puncture, extended to basal constriction as obtuse vault. Marginal channel broadened anteriorly in most of the specimens. Marginal setigerous punctures somewhat removed from reflexed border. Proepisternum less tumid laterally but still distinctly visible from above. Anterior angles distinct, obtuse. Anterior transverse line distinct at extremities, flat, not visible on disc. Median line sharp, deeper and broader posteriorly. Surface smooth, with few fine transverse wrinkles. Basal constriction broad. Ringlike flange subconvex, three times as broad as channel of constriction.

Elytron (Fig. 22): Anterior two thirds moderately convex. Elliptical, sites conspicuously and regularly rounded from humerus to apex. Maximum width at middle. Base truncated convexly. Marginal channel conspicuously broad, fold-like carina at apex intimated; reflexed margin distinct from humeral tooth to apex. Humeral tooth distinct, situated in extended projection of 6th stria. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 5th stria and a smaller one situated in extended projection of 2nd interval. Stria 1 to 5 deep, punctuate, 6 and 7 developed as rows of deep and partly connected punctures, 3rd to 7th shortened at base. Intervals moderately convex, flattened apically, first forming short but distinct carina at base, 8th forming obtuse overhanging carina in apical quarter, covering a quarter of marginal channel. Interval 3 and 5 with series of 11 to 13 setigerous punctures, approaching more or less inner stria. First stria conspicuously deep apically, all others ending apically before obtuse vault-like carina of 8th interval with decreasing length.

Ala: Rudimentary, length and width one third of elytron each.

Lower surface: Proepisternum with submarginal furrow in anterior quarter fine but distinct, furrow between prosternum and proepisternum distinct, much finer in anterior fifth. Slight broad fovea anteriorly below submarginal furrow. Terminal segment of abdominal sternite with fine transverse reticulation, in males in apical half, in females in apical two thirds.

♂: *Aedeagus* (Figs. 118, 121): Median lobe slender, moderately arcuate, bisinuate in lateral view; apex spatulate, explanate. Endophallus with bristles and row of small teeth. Parameres (Figs. 119, 120). bisetose.

♀: *Stylomere* (Fig. 167): Conspicuously broad at base, strongly arcuate.

Distribution: The species is found in the upper eastern highlands of Meghalaya (Fig. 186).

Etymology: The name is derived from the regular elliptical outline of the elytra.

Variations: 1♀, Meghalaya, Upper Shilong, 1900 m, 13.V.1976, leg. W. Wittmer, C. Baroni Urbani (NHMB): This specimen exhibits a more excised clypeus, anteriorly narrowed supraantennal plates, and the eyes are smaller (EI 4.0).

***Trilophus loebli* n. sp.**

Figs 23, 51, 122-125, 168

Type material: Holotype: ♂, Pakistan, Chitral, Kalas, 1900 m, 28.V.1983, leg. I. Löbl, & C. Besuchet (MHNG).

Paratypes: 2♂, 2♀, 6 specimens, same data as holotype; 1♂, same data as holotype but Madaglasht, 2700 m, 26.V.1983; 1♂, 1♀, 8 specimens., Pakistan, Dir, Dir, 1500 m, 20.V.1983, and 2 spec. 1600 m, 22.V.1983, all leg. I. Löbl, & C. Besuchet (MHNG/CBA).

DIAGNOSIS: A small sized yellow species with elliptical lateral margin of the elytra, and conspicuously reduced eyes. In lateral view, the elytra are conspicuously convex. Distinguished from other members of the group by the relatively small pronotum which lateral margin is stright and distinctly narrowed anteriorly. Distinguished from all other species by the reflexed lateral margin of the pronotum which is elongated widely over the posterior setigerous puncture.

DESCRIPTION

Measurements: Length 2.28 - 2.58 mm ($x = 2.46$ mm*); width 0.74 - 0.80 mm ($x = 0.78$ mm*); ratio length/width of pronotum 1.0 - 1.04 ($x = 1.01$ *); ratio length/width of elytra 1.70 - 1.81 ($x = 1.74$ *); (*n = 24).

Colour: Head, pronotum, elytron, ventral surface, and front legs yellow to yellow-brown. Base of elytron broadly yellowish, yellow spot at apex. Mouthparts, vault of supraantennal plates, antennae, intermediate and hind legs yellow.

Head: A third smaller than pronotum. Clypeus, wings, supraantennal plates distinctly margined; clypeus moderately and regularly excised anteriorly, wings projecting, rectangular, devided from supraantennal plates by distinct notches; supraantennal plates convex, carina-like prolonged to mid-eye level; keel on vertex sharp, longer as elevation of tubercle, reaching to mid-eye level. Clypeus and frons devided from supraantennal plates by deep and broad longitudinal furrows. Furrows diverging posteriorly, with 2nd distinct fovea, each. Short carina between furrow and frons at each side starting at mid-eye level, ending at posterior supraorbital seta. Frons convex, with fine irregular reticulation up to neck. Neck with slight constriction intimated at posterior eye level. Eyes conspicuously reduced, slightly convex, eye-index 4.6, nearly half of eyes enclosed by genae. Genae conspicuous, distinctly tumid posteriorly, as high as eyes, vault of eye and gena elongated posteriorly. Labrum slightly excised anteriorly. Antennae not short, segments big, segment 10 reaching over posterior setigerous puncture of pronotum, segment 5 to 10 moniliform.

Pronotum (Figs. 23, 51): Small. Lateral view: anterior quarter moderately convex, conspicuously convex in posterior three quarters up to basal constriction; frontal view: moderately and regularly convex. As long as wide, maximum width at middle, more straightly narrowed in anterior half. Anterior margin straight. Reflexed lateral border straight in anterior third, evenly rounded to posterior setigerous puncture, extending over posterior setigerous puncture, extended to basal constriction as fine line and obtuse vault. Marginal channel fine throughout. Proepisternum less tumid laterally but still distinctly visible from above. Anterior angles distinct. Anterior transverse line flat, distinct, elongated to middle but not reaching median line. Median line conspicuously sharp in total, deeper and broader posteriorly. Surface

indistinctly and irregularly reticulated. Ringlike flange convex, three times as broad as channel of constriction.

Elytron (Fig. 23): Explanate on disc. Subelongate, elliptical. Maximum width behind middle. Base truncated rectangularly. Marginal channel moderately broad, fold-like carina at apex fine, crossing channel completely; reflexed margin distinct from humeral tooth to apex. Humerus rounded, humeral tooth fine, situated in extended projection of 7th interval. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 6th interval and a smaller one situated in extended projection of 2nd interval. Stria 1 and 2 conspicuously deep, 3 to 5 moderately deep, all punctuate, 6 and 7 developed as rows of partly connected punctures, 3rd and 4th shortened at base. Intervals slightly convex, first forming short carina at base, 8th forming obtuse overhanging carina in apical third, covering a third of marginal channel. Interval 3 and 5 with series of 15 to 12 setigerous punctures, approaching more or less inner stria. First stria conspicuously deep apically, all others ending apically before obtuse vault-like carina of 8th interval with decreasing length.

Ala: Reduced but still folded at radial cell.

Lower surface: Proepisternum with submarginal furrow indistinct, traceable in anterior quarter, furrow between prosternum and proepisternum distinct. Terminal segment of abdominal sternite with distinct transverse to irregular reticulation in apical three fourths.

♂: Aedeagus (Figs. 122, 125): Median lobe slender, arcuate, slightly fractuate at middle; apex spatulate, conspicuously flattened. Endophallus with bristles. Parameres (Figs. 123, 124), bisetose.

♀: *Stylomere* (Fig. 168): Slender, fine.

Distribution: The species is found at the western border of Pakistan north of Peshawar, districts Chitral and Dir (Fig. 186).

Etymology: The species is dedicated to Dr. Ivan Löbl who has collected many of the species described in this contribution.

***Trilophus serratulus* n. sp.**

Figs 24, 52, 126-129, 169

Type material: Holotype: ♂, Pakistan, Swat, Marghuzar, 1300 m, 8.V.1983, leg. I. Löbl, & C. Besuchet (MHNG).

Paratypes: 6 specimens, same data as holotype (MHNG/CBA); 4 spec. Pakistan sept., envs. Punjab, Rawalpindi Lake, forêt de savane, 24.-26.IV.1984, and debris alluvion, 3.IV.1984, all leg. S. Vit (MHNG/CBA).

DIAGNOSIS: A small sized yellow species with elliptical and finely serrated lateral margin of the elytra, and conspicuously reduced eyes. In lateral view, the elytra are conspicuously convex. Distinguished from other members of the group by the pronotum which is widest at the posterior third, the conspicuously sharp median line, and the isolated and distinct teeth on the endophallus of the aedeagus.

DESCRIPTION

Measurements: Length 2.18 - 2.54 mm ($x = 2.43$ mm*); width 0.67 - 0.81 mm ($x = 0.77$ mm*); ratio length/width of pronotum 1.1 - 1.25 ($x = 1.17$ *); ratio length/width of elytra 1.67 - 1.77 ($x = 1.71$ *); (*n = 11).

Colour: Uniformly dark-yellow. Base and apex of elytron, mouthparts, and antennae paler.

Head: A third smaller than pronotum. Clypeus, wings, supraantennal plates finely but distinctly margined; clypeus moderately and regularly excised anteriorly, wings rectangularly projecting, devided from supraantennal plates by obtuse-angled notches; supraantennal plates vaulted, prolonged to mid-eye level as fine carina; keel on vertex sharp, longer as elevation of tubercle, reaching to mid-eye level. Clypeus and frons devided from supraantennal plates by deep and broad longitudinal furrows. Furrows diverging posteriorly, with 2nd distinct fovea, each. Carina between furrow and frons at each side starting at mid-eye level, ending at posterior supraorbital seta. Frons convex, with fine irregular reticulation up to neck constriction. Neck constriction at posterior eye level distinct, broadly interrupted at middle. Eyes conspicuously reduced, flattened, eye-index 4.5, half of eyes enclosed by genae. Genae conspicuous, slightly tumid, nearly as high as eyes, unit of eye and gena forming regularly rounded vault. Labrum nearly straight anteriorly. Antennae not short, segment 10 reaching over posterior setigerous puncture of pronotum, segment 5 to 10 moniliform.

Pronotum (Figs. 24, 52): Lateral view: Flattened at anterior transverse line, conspicuously convex posteriorly up to basal constriction; frontal view: moderately and regularly convex. Slightly longer than wide, maximum width at posterior third, evenly rounded in anterior three quarters. Anterior margin bisinuate. Reflexed lateral border evenly rounded up to posterior setigerous puncture, extended to basal constriction as fine line and obtuse vault. Marginal channel more distinct at anterior angles. Proepisternum moderately tumid posterolaterally. Anterior angles distinctly projecting. Anterior transverse line distinct, flattened, elongated to middle but not reaching median line. Median line conspicuously sharp in total, deeper posteriorly. Surface indistinctly and irregularly reticulated. Ringlike flange convex, three times as broad as channel of constriction.

Elytron (Fig. 24): Explanate on disc. Subelongate, elliptical. Maximum width at middle. Base convex, finely and irregularly reticulated. Marginal channel broad, fold-like carina at apex distinctly crossing channel completely; reflexed margin finely serrate in anterior two thirds, margin distinct from humeral tooth to apex. Humerus obtuse-angled, humeral tooth indistinct (more distinct in some females), situated in extended projection of 6th stria. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 5th stria and a smaller one situated in extended projection of 2nd interval. Stria 1 to 4 (5) conspicuously deep, 5 and 6 moderately deep, all punctuate, 6 and 7 developed as rows of partly connected punctures, 2nd to 4th shortened at base. Intervals slightly convex, suture impressed at base, 8th forming obtuse overhanging carina in apical third, covering a quarter of marginal channel. Interval 3 and 5 with series of 11 to 15 setigerous punctures, approaching more or less inner stria. First stria conspicuously deep apically, all others ending apically before obtuse vault-like carina of 8th interval with decreasing length.

Ala: Reduced, length and width two thirds of elytron, each.

Lower surface: Proepisternum with submarginal furrow in anterior quarter, indistinct; furrow between prosternum and proepisternum distinct. Slight broad fovea

anteriorly below submarginal furrow. Terminal segment of abdominal sternite with irregular transverse reticulation in apical two thirds.

Protibia: Movable spur shorter than spine.

♂: *Aedeagus* (Figs. 126, 129): Median lobe slender, arcuate; apex spatulate, cross section convex. Endophallus with bristles and few distinct and isolated teeth. Parameres (Figs. 127, 128), bisetose, ventral one with additional fine pilus at apex.

♀: *Stylomere* (Fig. 169): Fine, slender mesially and apically, strongly arcuate at apex.

Distribution: The species occurs in north-west Pakistan north of Peshawar (district Swat) and at the Rawalpindi Lake (Fig. 186).

Etymology: The name refers to the minute teeth at the margin of the elytron.

***Trilophus weberi* n. sp.**

Figs 25, 53, 130-133, 170

Type material: Holotype: ♂, Inde, Uttar Pradesh, Kumaon, Bhim Tal, 1500 m, 4.X.1979, leg. I. Löbl (MHNG).

Paratypes: 15 specimens, same data as holotype but 1500 m and 1800 m (MHNG/CBA).

DIAGNOSIS: A medium sized yellow species with subserrate lateral margin of the elytra, and distinctly reduced eyes. Distinguished from other members of the group by the stright but diverging lateral margin of the elytra, the complete anterior transverse line of the pronotum, and the anteriorly flattened pronotum (lateral view).

DESCRIPTION

Measurements: Length 2.40 - 2.64 mm ($x = 2.49$ mm*); width 0.67 - 0.80 mm ($x = 0.78$ mm*); ratio length/width of pronotum 0.98 - 1.09 ($x = 1.04$ *); ratio length/width of elytra 1.68 - 1.78 ($x = 1.73$ *); (*n = 16).

Colour: Head, pronotum, elytron, ventral surface, and front legs yellowish light-brown. Base of elytron broadly yellow. Palpi, antennae, intermediate and hind legs yellow.

Head: A third smaller than pronotum. Clypeus, wings, supraantennal plates distinctly margined; clypeus slightly and regularly excised anteriorly, wings rectangularly projecting, devided from supraantennal plates by obtuse-angled notches (in some paratypes by intimated notches); supraantennal plates vaulted, prolonged to mid-eye level as carina and turning to eye; keel on vertex sharp, longer as elevation of tubercle, reaching nearly to hind-eye level. Clypeus and frons devided from supra-antennal plates by deep and broad longitudinal furrows with 2nd distinct fovea, each. Furrows diverging posteriorly, turning mesially before neck. Carina between furrow and frons at each side starting at mid-eye level, ending at hind genae level. Frons convex, with median impression behind keel and fine irregular reticulation. Neck constriction at posterior eye level intimated. Eyes distinctly reduced, slightly convex, eye-index 3.3, two fifths of eyes enclosed by genae. Genae conspicuous, tumid, nearly as high as eyes, unit of eye and gena forming regular rounded vault. Labrum broad, moderately excised anteriorly. Antennae of moderate length, segment 10 just reaching posterior setigerous puncture of pronotum, segment 5 to 10 moniliform.

Pronotum (Figs. 25, 53): Lateral view: Anterior third flattened, conspicuously convex posteriorly up to basal constriction; frontal view: flattened at middle, moderately and regularly convex laterally. Slightly longer than wide, maximum width at middle. Anterior margin bisinuate. Reflexed lateral border evenly rounded up to posterior setigerous puncture, extended to basal constriction as fine line and obtuse vault. Proepisternum moderately tumid posterolaterally. Anterior angles distinctly marked. Anterior transverse line flat, distinct, elongated to middle. Median line conspicuously sharp in total, surpassing anterior transverse line, deeper posteriorly. Surface with few transverse wrinkles. Ringlike flange convex, three times as broad as channel of constriction.

Elytron (Fig. 25): Explanate on disc. Subelongate, sites rounded at humerus and at apical third, nearly straight at middle but diverging. Maximum width behind middle. Base slightly convex. Marginal channel broad, fold-like carina at apex distinctly crossing channel completely; reflexed margin subseriate in anterior two thirds, margin distinct from humeral tooth to apex. Humerus obtuse-angled, humeral tooth indistinct, situated in extended projection of 7th interval. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 5th stria and a smaller one situated in extended projection of 2nd interval. Stria 1 to 4 conspicuously deep, 5 moderately deep, all punctuate, 6 and 7 developed as rows of partly connected punctures. Intervals slightly convex, suture impressed at base, 8th forming obtuse overhanging carina in apical third, covering nearly two thirds of marginal channel. Interval 3 and 5 with series of 10 to 15 setigerous punctures, approaching more or less inner stria. First stria conspicuously deep apically, all others ending apically before obtuse vault-like carina of 8th interval with decreasing length.

Ala: Reduced, length and width half of elytron, each.

Lower surface: Proepisternum with submarginal furrow in anterior quarter, fine, furrow between prosternum and proepisternum profound. Slight broad fovea anteriorly below submarginal furrow. Terminal segment of abdominal sternite with irregular transverse reticulation, in apical two thirds.

Protibia: Movable spur shorter than spine.

♂: Aedeagus (Figs. 130, 133): Median lobe slender, arcuate; apex spatulate, convex. Endophallus with bristles and few teeth, 2nd group of few teeth at apical cup. Parameres (Figs. 131, 132) bisetose, ventral one occasionally with additional fine pilus at apex.

♀: *Stylomere* (Fig. 170): Medium sized, strongly arcuate mesially.

Distribution: The species is known from the type locality in Uttar Pradesh, Kumaon (Fig. 186).

Etymology: The species is dedicated to Prof. Dr. Friedrich Weber (Münster) to his 60th birthday.

***Trilophus serratus* n. sp.**

Figs 27, 55, 138-141, 172

Type material: Holotype: ♂, Nepal, Kathmandu, Umgeb. Kakani, 6.V.1993, leg. Kleeberg (MHNG).

Paratypes: 1 ♀, India, Darjeeling distr., Monshong, 1400 m, 5.V.1979, leg. B. Bhakta (NHMB); 1 ♂, Nepal, Chandam Bari, 3350 m, 23.V.1979, leg. B. Bhakta (CBA).

DIAGNOSIS: A small sized species with elongate elliptical lateral margin of the elytra, and conspicuously reduced eyes. In lateral view, the elytra are conspicuously convex. Distinguished from other members of the group by the pronotum which is widest at the posterior third, and the strikingly conspicuous serration of the lateral margin of the elytron which separates the species from all other species of the genus.

DESCRIPTION

Measurements: Length 2.21 / 2.40 / 2.45 mm; width 0.72 / 0.77 mm; ratio length/width of pronotum 1.0; ratio length/width of elytra 1.68 / 1.73.

Colour: Head, pronotum, ventral surface, and elytra red-brown. Supraantennal plates, wings, front of legs middle brown. Mouthparts, intermediate and posterior legs yellowish brown.

Head: A third smaller than pronotum, not elongate as in other species. Clypeus, wings, supraantennal plates finely but distinctly margined; clypeus slightly and regularly excised anteriorly, wings obtuse but projecting, devided from supraantennal plates by obtuse-angled notches; supraantennal plates vaulted, prolonged to mid-eye level as fine carina; keel on vertex sharp, longer as elevation of tubercle, reaching nearly to posterior eye-level. Clypeus and frons devided from supraantennal plates by deep longitudinal furrows. Furrows diverging posteriorly, with 2nd distinct fovea, each. Carina between furrow and frons at each side starting at mid-eye level, ending at posterior supraorbital seta. Frons convex, with fine irregular reticulation up to neck constriction, distinct transverse rugae at each side of keel and intimated median impression posterior keel. Broad indistinct neck constriction at posterior genae level. Eyes conspicuously reduced, slightly convex, eye-index 4.2 / 4.3, half of eyes enclosed by genae. Genae conspicuous, moderately tumid posteriorly, as high as eyes. Labrum broadly V-shaped anteriorly. Antennae moderately long, segment 10 reaching up to posterior setigerous puncture of pronotum. segment 5 to 10 moniliform.

Pronotum (Figs. 27, 55): Lateral view: Flattened at anterior transverse line, conspicuously convex posteriorly up to basal constriction; frontal view: moderately and regularly convex. As long as wide, maximum width at posterior third, nearly stright but diverging in anterior two thirds. Anterior margin nearly straight. Reflexed lateral border gently rounded at middle, more at anterior angle and posterior setigerous puncture, extended to basal constriction as obtuse vault and fine submarginal furrow. Proepisternum weaker tumid but distinctly visible from above. Anterior angles distinct, obtuse. Anterior transverse line extremely flat but approaching middle. Median line sharp, deeper posteriorly. Surface with some fine irregular transverse wrinkles. Ringlike flange acute, three times as broad as channel of constriction.

Elytron (Fig. 27): Slightly explanate on disc. Elongate, elliptical. Maximum width at middle. Base slightly convex. Marginal channel broad, fold-like carina at apex indistinct, incomplete; reflexed margin distinctly serrate in anterior three quarters, margin distinct from humeral tooth to apex. Humerus obtuse-angled, humeral tooth sharply projecting, situated in extended projection of 6th stria. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 5th stria and a smaller one situated in extended projection of

2nd interval. Stria 1 and 2 conspicuously deep, 3 to 5 moderately deep, all punctuate, 6 and 7 developed as rows of partly connected punctures, 2nd to 4th shortened at base. Intervals slightly convex, suture impressed at base, 8th forming obtuse overhanging carina in apical third, covering a third of marginal channel. Interval 3 and 5 with series of 12 to 15 setigerous punctures, approaching more or less inner stria. First stria conspicuously deep and broad apically, 2nd elongate at apex, all others ending before apical declivity with decreasing length.

Ala: Reduced, length and width one half of elytron, each.

Lower surface: Proepisternum with submarginal furrow in anterior third, distinct; furrow between prosternum and proepisternum distinct. slight broad fovea anteriorly below submarginal furrow. Terminal segment of abdominal sternite with transverse reticulation, in apical two thirds.

Protibia: Movable spur shorter than spine.

♂: *Aedeagus* (Figs. 138, 141): Median lobe arcuate at middle; apex spatulate, convex. Endophallus with bristles, 2nd group of bristles and few teeth at apical cup. Parameres (Figs. 139, 140), bisetose.

♀: *Stylomere* (Fig. 172): Moderately broad at base, broadened apically, slightly arcuate at middle.

Distribution: The species is found in Central Nepal and Darjeeling (Fig. 186).

Etymology: The name refers to the distinct serrate margin of the elytron.

***Trilophus convexus* n. sp.**

Figs 28, 56, 142-145

Type material: Holotype: ♂, Tonkin, Tam Dao, leg. H. Perrot, wod; separate label: Coll. H. Perrot in Coll. M. Curti MHNG-1991 (MHNG).

DIAGNOSIS: A small to medium sized species with elliptical and subserrate lateral margin of the elytra, and distinctly reduced eyes. Distinguished from other members of the group by the distinct and broadened anterior transverse line of the pronotum, and the broad lateral channel of the elytron. This is the only species with completely rounded humerus.

DESCRIPTION

Measurements: Length 2.33 mm; width 0.82 mm; ratio length/width of pronotum 1.0; ratio length/width of elytra 1.61.

Colour: Head, pronotum, ventral surface, and elytra brown. Mouthparts, margin of supraantennal plates, wings of clypeus, legs brownish-yellow. Antennae yellow-brown.

Head: A third smaller than pronotum. Clypeus, wings, supraantennal plates finely but distinctly margined; clypeus nearly stright truncated, wings distinctly rectangularly projecting but rounded, devided from supraantennal plates by obtuse-angled notches; supraantennal plates vaulted, prolonged to hind-eye level as fine carina; carina turning to eye; keel on vertex sharp, longer as elevation of tubercle, reaching to mid-eye level. Slight transverse furrow crossing keel without interrupting. Clypeus and frons devided from supraantennal plates by deep and broad longitudinal furrows. Furrows diverging posteriorly, with 2nd distinct fovea, each. Carinae between furrow and frons

at each side short. Frons convex, with fine isodiametric reticulation, fine fovea behind keel. Neck constriction indistinct, visible at sides. Eyes distinctly reduced, moderately convex, eye-index 3.1. Genae distinct, nearly as high as eyes, enclosing eyes by one third, unit of eye and gena forming regularly rounded vault. Labrum straight anteriorly. Antennae shortened, segment 10 reaching up to posterior setigerous puncture of pronotum, segment 5 to 10 submoniliform.

Pronotum (Figs. 28, 56): Lateral view: moderately convex; frontal view: moderately convex, slightly flattened laterally. As long as wide, maximum width at middle. Anterior margin slightly bisinuate, convex at middle, sides evenly convex. Reflexed lateral border gently rounded at middle up to posterior setigerous puncture, extended to basal constriction as indistinct obtuse vault with fine line representing submarginal furrow, disappearing basally. Proepisternum moderately tumid posterolaterally. Anterior angles distinct, slightly projecting. Anterior transverse line distinct at extremities, elongated and broadened mesially. Median line sharp, deeper posteriorly. Surface with some fine irregular transverse wrinkles. Ringlike flange convex, three times as broad as channel of constriction.

Elytron (Fig. 28): Slightly convex anteriorly in lateral view, distinctly convex in frontal view. Outline nearly elliptical, humerus rounded totally. Maximum width at middle. Base conspicuously convex. Marginal channel conspicuously broad, fold-like carina at apex indistinct, incomplete; reflexed margin broad, transparent yellowish, conspicuous at base, minutely serrate in anterior three quarters. Humerus intimated, humeral tooth indistinct, not projecting, situated in extended projection of 6th interval. Two conspicuous basal setigerous punctures with tubercles, one adjoining lateral margin at humerus at extended projection of 5th interval and a 2nd one situated in extended projection of 2nd interval. Additional longitudinal tubercle without setigerous puncture situated in first interval at base. Stria 1 to 4 conspicuously deep, 5 moderately deep, all punctuate, 5 to 7 developed as rows of partly connected punctures, 7th shortened at base and apically. Intervals conspicuously convex, obtuse apical carina of 8th interval indistinct. Interval 3 and 5 with series of 16 setigerous punctures, approaching more or less inner stria. First stria conspicuously deep apically, all others ending on apical declivity. Interval 8 with short sharp carina at apex.

Ala: Reduced, length one half, width one third of elytron, each.

Lower surface: Proepisternum flattened anteriolaterally, with submarginal furrow fine in anterior quarter; furrow between prosternum and proepisternum distinct. Terminal segment of abdominal sternite with indistinct transverse reticulation in apical half.

Protibia: Movable spur as long as spine, turned ventrally in apical half.

♂: *Aedeagus* (Figs. 142, 145): Median lobe slender, moderately arcuate at middle, hollowed out laterally; apex spatulate, cross section convex. Endophallus with bristles and teeth, 2nd group of teeth at apical cup. Parameres (Figs. 143, 144), bisetose, attenuate apically.

♀: *Stylomere* unknown.

Distribution: Known from the type locality in North Vietnam (Fig. 186).

Etymology: The name pays attention to the distinct convexity of the elytra shape.

GROUP **acuminatus**

Diagnostic combination of characters: Species of this group may be distinguished by the following combination of characters: Medium sized; wings of clypeus acute projecting, eyes well developed, genae small, keel on frons of head small, labrum with regular transverse reticulation; posterolateral tumidity of the proepisterna just visible, size of flange small; lateral channel of elytra carinate at apex, setae present on intervals 3 and 5.

***Trilophus acuminatus* n. sp.**

Figs 29, 57, 146-149, 173

Type material: Holotype: ♂, Sumatra, Palembang, leg. Dr. Foerster, wod (MNHP).

Paratype: 1 ♀, W Java, Cibodas, 50 km E Bogor, 1400 m, 3.-6.XI.1989, leg. I. Löbl, P. Agosti, D. Burckhardt (MHNG).

DIAGNOSIS: A medium sized species with subelongate and slightly transversally depressed elytra, elongated eyes, and less rounded lateral margin of the pronotum. Distinguished from other members of the group by the anterior transverse line of the pronotum which is just visible at the extremities, the shortened reflexed lateral margin which ends at middle between the anterior and posterior setigerous puncture, the moniliform antennae, and the apically pointed parameres of the male genitalia.

DESCRIPTION

Measurements: Length 2.58/2.66 mm; width 0.84/0.85 mm; ratio length/width of pronotum 1.02/1.07; ratio length/width of elytra 1.67/1.69.

Colour: Head, pronotum, ventral surface, and elytra brown. Anterior tip of supraantennal plates, wings of clypeus, mouthparts, intermediate and posterior legs, and first three segments of antennae yellowish brown. Other segments of antennae darkened.

Head: A third to quarter smaller than pronotum. Clypeus, wings, supraantennal plates finely but distinctly margined; clypeus slightly and regularly excised anteriorly, wings rectangularly projecting but rounded, devided from supraantennal plates by slight obtuse-angled notches; supraantennal plates vaulted, prolonged to anterior supraorbital seta as fine carina; keel on vertex blunt, shorter as elevation of tubercle, just reaching over anterior eye-level. Clypeus and frons devided from supraantennal plates by deep longitudinal furrows. Furrows diverging posteriorly, without 2nd fovea. Carina between furrow and frons at each side small, inconspicuous. Frons convex, with finely sticked punctures, no median impression posterior keel. Indistinct neck constriction just traceable laterally. Eyes large, elongated, moderately convex, eye-index 2.00/2.22, dorsally visible part of genae rudimentary. Labrum moderately excised anteriorly. Antennae of moderate size, segment 11 reaching over posterior setigerous puncture of pronotum, segment 5 to 10 subelongate.

Pronotum (Figs. 29, 57): Lateral view: anterior three quarters slightly convex, moderately convex in posterior quarter up to basal constriction; frontal view: flattened at middle. Slightly longer than wide, maximum width behind middle. Anterior margin straight. Reflexed lateral border reduced, ending at middle between anterior and

posterior setigerous puncture, extended over posterior setigerous puncture up to basal constriction as obtuse vault and extreme fine submarginal furrow. Proepisternum weakly tumid laterally. Anterior angles rounded but distinct, formed by prolongation of reflexed margin. Anterior transverse line visible at extremities. Median line sharp, not deep at middle. Surface with few fine irregular transverse wrinkles laterally. Ringlike flange convex, four times as broad as channel of constriction.

Elytron (Fig. 29): Slightly depressed transversally in anterior half. Subelongate, sites rounded regularly in anterior two thirds, gently narrowed at humerus. Maximum width slightly behind middle. Base truncated obliquely. Marginal channel moderately broad, fold-like carina at apex incomplete, indistinct; reflexed margin smooth, margin distinct from humeral tooth to apex, extraordinary fine at base. Humerus obtuse-angled, somewhat rounded but distinct, humeral tooth small, not projecting, situated in extended projection of 6th stria. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 5th stria and a smaller one situated in extended projection of 2nd interval. Stria 1 and 2 conspicuously deep, 3 to 5 moderately deep, all punctuate, 6 and 7 developed as rows of partly connected punctures. Intervals 1 - 4 moderately convex, others more flattened, suture impressed at base, 8th forming obtuse slightly overhanging carina in apical third. Interval 3 with series of 15 setigerous punctures, approaching inner stria, interval 5 with 15 setigerous punctures situated at middle. First stria conspicuously deep and broad apically, all others ending on apical declivity with decreasing length.

Ala: Fully developed.

Lower surface: Proepisternum with submarginal furrow in anterior quarter indistinct; Terminal segment of abdominal sternite with indistinct transverse striolation in apical half. Ventral strigae weakly developed.

Protibia: Movable spur as long as spine, turned moderately ventrally.

♂: *Aedeagus* (Figs. 146, 149): Median lobe slender, slightly fractuate at middle, gently bisinuate in lateral view; apex spatulate, nearly stright. Endophallus with bristles and group of few teeth. Parameres (Figs. 147, 148), bisetose, both acuminate pointed at apex, ventral one twisted conspicuously.

♀: *Stylomere* (Fig. 173): Broadened at base, strongly arcuate at middle.

Distribution: Known from the two type localities in south-east Sumatra and west Java (Fig. 185).

Etymology: The name refers to the acutely pointed parameres of the male genitalia.

***Trilophus elongatus* n. sp.**

Figs 30, 58, 150-152, 174

Type material: Holotype: ♂, Java, Praeanger, Bandoeng Dago, 26.IV.1928, leg. F. C. Drescher (BMNH).

Paratypes: 1 ♀, same data as holotype but "lamp", 3.X.1929 (ZSM), 1 ♀, same data but 27.III.1930 (MNHP).

DIAGNOSIS: A medium sized species with gently rounded, conspicuously elongated, and slightly transversally depressed elytra, large eyes, and convex lateral margin of the pronotum. Distinguished from other members of the group by the acute

flange and narrow basal constriction of the pronotum, the shortened reflexed lateral margin which ends just before reaching the posterior setigerous puncture, and the elongated shape of the elytra which exhibits its maximum widths at middle.

DESCRIPTION

Measurements: Length 2.66 / 2.83 mm; width 0.84 / 0.90 mm; ratio length/width of pronotum 1.0; ratio length/width of elytra 1.75 / 1.81.

Colour: Head, pronotum, ventral surface, and elytra middle-brown. Anterior tip of supraantennal plates, wings of clypeus, palpi, intermediate and posterior legs, antennae yellowish brown. Base of elytron with yellow spot at declivity.

Head: A third smaller than pronotum. Clypeus, wings, supraantennal plates finely but distinctly margined; clypeus nearly straight at middle, wings rectangularly projecting but rounded, devided from supraantennal plates by obtuse-angled notches; supraantennal plates vaulted, prolonged to anterior supraorbital seta as fine carina; keel on vertex sharp, as long as elevation of tubercle. Clypeus and frons devided from supraantennal plates by deep longitudinal furrows. Furrows diverging posteriorly, with 2nd distinct fovea each. Fine transverse furrow posterior tubercle connecting foveae, interrupted by keel. Carina between furrows at each side distinct. Frons moderately convex, (in PT with longitudinal reticulation laterally to keel), no median impression posterior keel. Neck constriction visible laterally. Eyes large, moderately convex, eye-index 1.95 / 2.21, dorsally visible part of inconspicuous genae one quarter of eye. Labrum moderately excised anteriorly. Antennae long, segment 10 reaching over posterior setigerous puncture of pronotum, segment 5 to 10 subelongate.

Pronotum (Figs. 30, 58): Lateral view: flattened, posterior fifth conspicuously convex to basal constriction; frontal view: regularly and moderately convex. As long as wide, maximum width at middle. Anterior margin slightly convex. Reflexed lateral border just not reaching posterior setigerous puncture, fine posteriorly, extended over posterior setigerous puncture up to basal constriction as obtuse vault and fine submarginal furrow. Proepisternum weakly tumid posterolaterally. Anterior angles distinct, formed by prolongation of reflexed margin. Anterior transverse line intimated at extremities. Median line sharp, equally deep in whole length. Surface with few fine irregular transverse wrinkles. Ringlike flange acute, two to three times broader as channel of constriction.

Elytron (Fig. 30): Slightly depressed transversally in anterior half. Conspicuously elongate, sites rounded gently, slightly narrowed at humerus. Maximum width at middle. Base truncated rectangularly. Marginal channel broad, fold-like carina at apex indistinctly crossing channel; reflexed margin distinct from humeral tooth to apex, fine at base. Humerus obtuse-angled, distinct, humeral tooth small, slightly projecting, situated in extended projection of 6th stria. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 5th interval and a smaller one situated in extended projection of 2nd interval. Stria 1 to 5 conspicuously deep, 6 and 7 deep, all punctuate, 6 and 7 developed as rows of partly connected punctures. Intervals 1 - 5 distinctly convex, others more flattened, suture impressed at base, 8th forming obtuse overhanging carina in apical third, covering

half of marginal channel. Interval 3 with series of 16 to 18 setigerous punctures, approaching inner stria, interval 5 with 15 to 16 setigerous punctures situated at middle. First stria conspicuously deep and broad apically, all others ending on apical declivity with decreasing length.

Ala: Fully developed.

Lower surface: Proepisternum with submarginal furrow in anterior third indistinct; Terminal segment of abdominal sternite smooth in male, with distinct transverse reticulation in apical half in females. Ventral strigae conspicuous.

Protibia: Movable spur slightly shorter than spine, turned moderately ventrally.

♂: *Aedeagus* (Figs. 150, 152): Median lobe slender, arcuate at middle, stright in lateral view; apex spatulate, slightly turned dorsally. Endophallus with fine bristles basally, group of teeth at base of apical cup. Parameres (Figs. 150, 151), bisetose, both rounded at apex, ventral one twisted conspicuously.

♀: *Stylomere* (Fig. 174): Stout at base, base of apical ensiform seta conspicuously strong.

Distribution: Known from Bandoeng Dago near Kediri, Java (Fig. 185).

Etymology: The conspicuous elongated elytra are expressed by the name.

***Trilophus latiusculus* n. sp.**

Figs 31, 59, 175

Type material: Holotype: ♀, Depok, 11.IV.1948, leg. C.V. Nidek (ZSM).

DIAGNOSIS: A medium sized species with subelongate but broadened and flattened elytra, well developed eyes, and less rounded lateral margin of the pronotum. Distinguished from other members of the group by characters of the pronotum which is distinctly broadened and flattened, exhibits a broadened lateral channel, and a broadened anterior transverse line.

DESCRIPTION

Measurements: Length 2.50 mm; width 0.84 mm; ratio length/width of pronotum 0.96; ratio length/width of elytra 1.57.

Colour: Head, pronotum, ventral surface, and elytra middle-brown. Vault of supraantennal plates, wings of clypeus, mouthparts, legs, and antennae yellowish brown. Base of elytron broadly yellowish at declivity.

Head: A third smaller than pronotum, not elongate anteriorly. Clypeus, wings, supraantennal plates finely margined; clypeus regularly excised anteriorly, wings rectangularly projecting, with distinct isodiametric reticulation, devided from supraantennal plates by indistinct obtuse-angled notches; supraantennal plates vaulted, prolonged to anterior supraorbital seta as blunt carina; keel on vertex moderately sharp, as long as elevation of tubercle, reaching to mid-eye level. Clypeus and frons devided from supraantennal plates by deep longitudinal furrows. Furrows diverging posteriorly, with 2nd deep fovea each. Carina between furrow and frons at each side sharp, distinct. Frons moderately convex, with fine isodiametric reticulation laterally to keel, slight median impression posterior keel. Neck constriction traceable laterally, with group of punctures at posterior supraorbital puncture. Eyes well developed,

moderately convex, eye-index 2.19, dorsally visible part of inconspicuous genae one sixth of eye. Labrum distinctly excised anteriorly. Antennae long, segment 11 reaching to basal constriction of pronotum, segment 5 to 10 subelongate.

Pronotum (Figs. 31, 59): Lateral view: anterior three quarters slightly convex, conspicuously convex to basal constriction; frontal view: regularly and slightly convex. Slightly broader than wide, maximum width at middle, appearance conspicuously flattened and broadened in dorsal view. Anterior margin slightly convex. Reflexed lateral border just reaching posterior setigerous puncture, extended over posterior setigerous puncture as fine submarginal furrow. Lateral channel broadened, ending at middle of pronotum. Obtuse vault to basal constriction rounded. Proepisternum weakly tumid laterally. Anterior angles slightly projecting, rounded, formed by prolongation of reflexed margin. Anterior transverse line broad, indistinct, but approaching median line. Median line sharp, not deep at middle. Surface with few fine irregular transverse wrinkles. Ringlike flange convex, two times as broad as channel of constriction.

Elytron (Fig. 31): Flattened in anterior half. Subelongate but shorter and broadened, sites rounded gently in anterior half, slightly narrowed to humerus. Maximum width behind middle. Base truncated subconvexly. Marginal channel moderately broad, fold-like carina at apex indistinct, incomplete; reflexed margin distinct from humeral tooth to apex, fine at base. Humerus somewhat rounded but distinct, humeral tooth small, not projecting, situated in extended projection of 6th stria. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 6th interval and a smaller one situated in extended projection of 2nd interval, connected with first stria. Stria 1 to 4 deep, 5 moderately deep, all punctuate, 6 and 7 developed as rows of partly connected punctures. Intervals 1 - 5 moderately convex, others more flattened, suture impressed at declivity of base, 8th forming obtuse slightly overhanging carina in apical third. Interval 3 with series of 15 setigerous punctures, approaching inner stria, interval 5 with 14 setigerous punctures situated at middle. First stria conspicuously deep and broad apically, all others ending on apical declivity with decreasing length.

Ala: Reduced, length three quarters of elytron, width nearly as broad as elytron.

Lower surface: Submarginal furrow of proepisternum just traceable in anterior third. Terminal segment of abdominal sternite with distinct transverse reticulation in apical two thirds. Ventral strigae distinct.

Protibia: Movable spur slightly shorter than spine, turned moderately ventrally.

♂: *Aedeagus* unknown.

♀: *Stylomere* (Fig. 175): Medium sized, strongly arcuate basomesially.

Distribution: Known from the type locality in Depok, west Java (Fig. 185).

Etymology: The name was derived from the flattened pronotum which gives the shape a broadened appearance.

***Trilophus imitator* n. sp.**

Figs 32, 60, 176

Type material: Holotype: ♀, Preanger, Java, 4000 - 5000 Voet, G. Tangkoeban Prahoe, 21.XI.1929, F.C. Drescher; 2nd label: cultus ex gezeefd Ondg., Tjiater-Kina; 3rd label: H.E. Andrewes Coll. B.M. 1945 - 97 (BMNH).

Paratype: 1 ♀, Indonesia, Bali, dist. Besa Kih, 21.II.1987, leg. Taiti, C. Manicasteri (MZUF).

DIAGNOSIS: A medium sized species with subelongate elytra, and convex lateral margin of the pronotum. Distinguished from other members of the group by the small eyes, the distinct reticulation on the frons of the head posterior keel, the subelongate antennae, and the stright but diverging lateral margin of the elytra.

DESCRIPTION

Measurements: Length 2.46 / 2.58 mm; width 0.80 / 0.82 mm; ratio length/width of pronotum 0.98 / 1.0; ratio length/width of elytra 1.75.

Colour: Head, pronotum, ventral surface, and elytra middle-brown. Anterior tip of supraantennal plates, wings of clypeus, mouthparts, intermediate and posterior legs, and first three segments of antennae yellowish brown. Other segments of antennae slightly darkened. Declivity at base of elytron broadly yellowish.

Head: A third to quarter smaller than pronotum. Clypeus, wings, supraantennal plates finely but distinctly margined; clypeus slightly and regularly excised anteriorly, wings rectangularly projecting, rounded, devided from supraantennal plates by distinct obtuse-angled notches; supraantennal plates vaulted, prolonged to anterior supraorbital seta as fine carina; keel on vertex blunt, shorter as elevation of tubercle, just reaching over anterior eye-level. Clypeus and frons devided from supraantennal plates by deep longitudinal furrows. Furrows diverging posteriorly, with small but distinct 2nd fovea, each. Carina between furrow and frons at each side small. Frons convex, with isodiametric reticulation, no median impression posterior keel. Blunt and slight transverse carina crossing frons posterior tubercle, interrupted by keel. Indistinct neck constriction laterally. Eyes small but well developed, moderately convex, eye-index 2.4, dorsally visible part of genae inconspicuous. Maxillary palpi slightly shortened. Labrum slightly excised anteriorly. Antennae moderately long, segment 10 reaching up to posterior setigerous puncture of pronotum, segment 5 to 10 subelongate.

Pronotum (Figs. 32, 60): Lateral view: anterior three quarters moderately convex, distinctly convex in posterior quarter to basal constriction; frontal view: moderately and regularly convex. As long as wide, maximum width at middle. Anterior margin straight. Reflexed lateral border ending at posterior setigerous puncture, fine posteriorly, extended over posterior setigerous puncture up to basal constriction as obtuse vault and extreme fine submarginal furrow. Lateral channel ending before reaching posterior setigerous puncture. Proepisternum slightly tumid laterally but well visible from above. Anterior angles bend ventrally, dorsal visible part rounded. Anterior transverse line inconspicuous but approaching median line. Median line sharp, deeper posteriorly. Surface with few fine irregular transverse wrinkles. Ringlike flange convex, two times as broad as channel of constriction.

Elytron (Fig. 32): Flattened transversally in anterior half. Subelongate, broadened in posterior third, sites stright in anterior half but diverging. Maximum width behind middle. Base truncated obliquely. Marginal channel broad, fold-like carina at apex indistinct, incomplete; reflexed margin smooth, margin distinct from humeral

tooth to apex, fine at base. Humerus obtuse-angled, distinct, humeral tooth small, slightly projecting, situated in extended projection of 7th interval. Two conspicuous basal tubercles with setigerous punctures, one adjoining lateral margin at humerus at extended projection of 6th stria and a smaller one situated in extended projection of 2nd interval adjoining slightly first stria. Stria 1 and 2 conspicuously deep, 3 to 5 moderately deep, all punctuate, 6 and 7 developed as rows of partly connected punctures. Intervals 1 - 3 distinctly, 4 moderately convex, others more flattened, suture impressed at base, 8th forming indistinct slightly overhanging carina in apical third. Interval 3 with series of 14 / 17 setigerous punctures, approaching more or less inner stria, interval 5 with 12 / 14 setigerous punctures situated at middle. First stria conspicuously deep and broadened apically, all others ending abruptly on apical declivity with decreasing length.

Ala: Reduced, in holotype length up to radial cell but not folded, width three quarters of elytron; in paratype. length two thirds, width half of elytron.

Lower surface: Proepisternum with submarginal furrow in anterior quarter fine. Terminal segment of abdominal sternite with transverse reticulation in apical half. Ventral strigae conspicuous.

Anterior leg: Profemur: slightly shortened, thickened. Protibia: Movable spur shorter than spine, stright.

♂: *Aedeagus* unknown.

♀: *Stylomere* (Fig. 176): Medium sized, slightly arcuate; basal ensiform seta small.

Distribution: Known from the type localities in east Java and in Bali (Fig. 185).

Etymology: The name reflects the impression of the high similarity of the elytra with those of *T. latiusculus* n. sp.

Variation: In addition to the variation given in the description, the stylomeres of the female from Bali are slightly shorter and more thickened. Possibly, the population from Bali represents a subspecies of *T. imitator*. Without more material including investigation of the male genitalia of both of the subpopulations this can not be cleared.

DISCUSSION

PHYLOGENETIC ASPECTS

In general, the genus *Trilophus* is characterised by a high uniformity. In addition there are species known only by one sex, and of some species there are only single specimens available. This causes difficulties in evaluating the characters of these species and consequently settlement of the phylogenetic status at all. This is one reason why approaches are proposed only for the phylogenetic relationships.

For reconstruction of the phylogenetic relationships HENNIG'S (1966) method is followed in principle. As emphasised by LESCHEN & LÖBL (1995) a well defined sister taxon and outgroups for polarising the characters should be used, if possible. This group is available represented by the genus *Trilophidius* Jeannel and was primarily used. If this was not possible other Oriental and African groups of Clivinini were used

as outgroup(s) indicated in Tab. 4. For the direction of reading of character states the same outgroup(s) was(were) used. The numbering of the postulated character states in Tab. 4 corresponds to the numbers in the data matrix (Tab. 5) and the cladogram (Fig. 178).

TAB. 4

CHARACTERS AND CHARACTER STATES USED FOR THE PHYLOGENETIC RELATIONSHIPS PROPOSED. NUMBERS IN PARENTHESIS INDICATE DIFFERENT CHARACTER STATES, LETTERS DIFFERENT CHARACTER STATES OF A MORPHOCLINE.

1. Big to medium sized (0); plesiomorphic; very small body size (1); apomorphic. Members of the sister-group are medium and very small sized. With the exception of *Leleuporella* Basilewsky and few members of *Syleter* Andrewes all other Oriental Clivinini are much bigger. A very small body size is therefore inferred as apomorphic.
2. Brown (0); plesiomorphic. The sister-group is brown coloured as it is in *Syleter* and *Leleuporella*. Most members of the other Clivinini are black. The yellow colour (1) only present in some members of the ingroup is recognised as absence of pigmentation and considered to be apomorphic.
3. Wings of clypeus anteriorly rounded, not projecting (0); plesiomorphic. The character is present in the majority of members of the genus *Clivina* and related genera. In the more evolved Clivinini genera *Ancus* Putzeys, *Coryza* Putzeys, *Sparostes* Putzeys, *Oritites* Andrewes, and *Leleuporella* the wings are acutely projecting. In the sister-group most of the members exhibit rounded clypeal wings. Acutely projecting wings (1) are inferred to be apomorphic.
4. Anterior margin of clypeus straight to moderately excised (0); plesiomorphic by outgroup comparison. Deeply V-shaped excised (1); not present in the sister-group and other Oriental Clivinini and inferred to be apomorphic.
5. Genae indistinct (0); plesiomorphic; genae enclosing the eyes posterolaterally as high as the eyes are present in 3 of the 12 members of the sister-group. The character is also present in few other Clivinini (e.g., in one member of *Leleuporella* from Africa) but all of these members also show many other highly derived characters. High of genae laterally as high as eyes (1) is therefore inferred to be apomorphic.
6. Length of genae short, inconspicuous (0); plesiomorphic by outgroup comparison; tumid, elongated (1); apomorphic. The character is not present in the sister-group. To my knowledge it is only present among the Clivinini in the Oriental genus *Sinesetosa* Balkenohl, the South-American species *Clivina urophthalma* Putzeys and *C. urophthalmoides* Kult and the genus *Camptodontus* Dejean, all of them belonging to very different lineages.
7. Eyes well developed, shape convex (0); plesiomorphic by outgroup comparison; deplanate or reduced (1); apomorphic. The character is present in few members of the sister-group. It is considered to be an adaptation to terrestrial conditions developed independently among the stocks of some Clivinini. In the ingroup the character is present in all members of the group *interpunctatus* and *ellipticus*. It is also present in 2 species out of 2 other groups and is presumably evolved independently among the groups.
8. Keel on frons short (0); plesiomorphic by outgroup comparison; distinctly elongated posteriorly (1); only present in the ingroup and inferred as apomorphic.
9. Frons with distinct regular reticulation behind keel (0); plesiomorphic. In the sister-group the character is present in some members. It is also present in the related genus *Syleter* and some other smaller Clivinini (for example *Lophocoryza* Alluaud, *Halocoryza* Alluaud, etc.). Reticulation behind keel absent or hardly traceable (1); apomorphic and possibly convergently developed.
10. Labrum anteriorly stright or slightly bisinuate (0); plesiomorphic, present in the sister-group and other Clivinini; deeply excised (1) present in some members of the ingroup and inferred as apomorphic perhaps independently evolved.

11. Presence of 7 labral setae (0) is considered to be plesiomorphic since this character is found in most members of Oriental and African *Clivina* Latreille and all members of *Pseudoclivina* Kult, *Ancus* Putzeys, *Coryza*, *Sinesetosia*, *Sparostes*, *Oricrites*, and in some members of *Syleter*. *Androzelmia* Dostal, *Bohemia* Putzeys, *Rugiliclvina* Balkenohl, and few members of *Clivina* exhibit 6 labral setae. Only several members of *Syleter*, some Australian *Clivina*, and single members of the sister-group and ingroup exhibit 5 labral setae. As far as I know, *Syleter* is the only genus having as a minimum one member with 3 labral setae. Therefore reduction from 7 to 5 labral setae (1) is inferred to be apomorphic.
12. Labral surface with regular reticulation (0): plesiomorphic by outgroup comparison as this character is present in the sister-group and nearly all other Clivinini; with irregular reticulation (1): inferred as apomorphic.
13. Maxillary palpomeres medium sized, slender apically (0): plesiomorphic by outgroup comparison; The character is present in the sister-group and the related genera *Syleter* and *Leleuporella*. Palpomeres shortened (1): apomorphic and presumably developed convergently in 2 species. In the other Clivinini the maxillary palpomeres are of different ground types (e.g., fusiform or ensiform) but not bottle-like and therefore not useable.
14. Antennomere 5-10 subelongate (0): plesiomorphic. In the sister-group the character is present only in some members. However, it is present in *Syleter* Andrewes and many of the other Clivinini. Antennomeres elongate (1), or moniliform (2): different apomorphic states and possibly independently evolved.
15. Length/width of pronotum medium sized (0): plesiomorphic by outgroup comparison since this character is present in the sister-group and nearly all other Clivinini; pronotum wider (1): apomorphic, present only in one member of the ingroup.
16. Proepisternum posterolaterally moderately tumid (0): plesiomorphic by outgroup comparison as present in the sister-group; slightly swollen, just visible from above (1), or strikingly tumid (2): different apomorphic states.
17. Pronotum regularly formed with maximum width at middle (0): plesiomorphic by outgroup comparison; maximum width situated at or in 2nd third (1): absent in the sister-group and inferred to be apomorphic. As far as I know, the character is present also in some members of *Syleter* and the African genus *Basilewskyana* Kult and presumably independently evolved in the ingroup.
18. Reflexed lateral margin of pronotum reaching over posterior setigerous puncture (0): plesiomorphic by outgroup comparison; not reaching posterior puncture (1), or ending in posterior third (2), or ending in anterior third (3): only present in the ingroup and inferred to be different apomorphic states.
19. Lateral margin of pronotum bisetose (0): plesiomorphic by outgroup comparison; 5-setose (1): present only in the ingroup and inferred as apomorphic.
20. Median line of pronotum conspicuously deep at base (0): plesiomorphic; weakly developed and not reaching channel of constriction (1): apomorphic. In the sister-group the median line is developed weakly but reaches distinctly the channel. As far as I know in all other Clivinini the line is deep at base and the character is therefore inferred to be plesiomorphic.
21. Median line of pronotum anteriorly deep and well developed (0): plesiomorphic by outgroup comparison; abruptly ending and absent in anterior third (1), or finely vanishing and absent (2): different apomorphic states only present in the ingroup.
22. Impression of anterior transverse line of pronotum visible laterally by 50% at a minimum (0): plesiomorphic by outgroup comparison since all Clivinini have a complete anterior transverse line and in the sister-group the line is visible by 50% or more in most of the members; line intimated at extremities (1): apomorphic. In the ingroup the character is present in different species groups and represents possibly a underlying synplesiomorphy.
23. Channel of pronotal constriction hollowed out concisely (0): plesiomorphic since it is present in the sister-group, *Syleter*, *Leleuporella*, and nearly all other Clivinini; V-shaped (1): apomorphic, only present in the ingroup and evolved in different species groups.
24. Form of pronotal flange convex (0): plesiomorphic by outgroup comparison; acute (1): apomorphic and only present in the ingroup and presumably independently evolved.

25. Size of pronotal flange small (0): plesiomorphic by outgroup comparison; 1.5 times as broad as channel of constriction or broader (1): only present in the ingroup and inferred as apomorphic. The flange can be up to 3 times as broad as the channel and the character possibly represents different states of a morphocline, not worked out in detail by measurements.
26. Shape of elytra (lateral margin, dorsal view) intermediate, subelongate, or elongate, also representing the typical ground shape among the Clivinini (0): plesiomorphic by outgroup comparison; parallel (1), or elliptical (2): different apomorphic states.
27. Shape of elytral disc flat in lateral view, also representing the typical shape among the Clivinini (0): plesiomorphic by outgroup comparison; transversally depressed in anterior half (1), or distinctly convex (2): inferred as different apomorphic states. Transversally depressed elytra are present also in some members of *Clivina*. A distinctly convex shape is not present among the Oriental Clivinini. If these characters are present in the sister-group is unknown.
28. Humerus with distinct angle (0): plesiomorphic as this character is present in most members of the ingroup and most of the other Clivinini; angle indistinct, obtusely rounded (1): apomorphic, presumably connected with elliptical shape of elytra and also present in 3 members of the sister-group.
29. Lateral margin of elytra smooth (0): plesiomorphic by outgroup comparison; subserrate (1), or serrate (2): different apomorphic states presumably convergently developed. To my knowledge the sister-group does not have this character but it is present in single Clivinini, e.g. *Leleuporella caeca* Basilewsky from Afrika. It is considered to be an adaptation to terrestrial conditions and occurs together with reduced eyes, tumid genae, and reduced alae.
30. Row of setae on interval 3 ending at the beginning of apical declivity (0): plesiomorphic by outgroup comparison; extended to tip of apex (1): only present in the ingroup and members of *Leleuporella*, and inferred to be apomorphic.
31. Setae on intervals: The outgroup as well as the majority of the Oriental and African Clivinini have setae on the 3rd interval only (14 of 19 genera compared). Two genera (*Leleuporella*, *Coryza*) have setae on intervals 3 and 5, and 2 genera (*Halocoryza*, *Sinesetosa*) on intervals 3, 5, and 7. These 4 genera are apotypic in many other characters and inferred as highly derivative groups. Among the Oriental and African Clivinini, there is no genus known to me which members have in addition setae on intervals 2, 4, and 6. In the ingroup presence of setae on intervals 3 and 5 (0) is considered to be plesiomorphic. Additional setae present on other intervals is inferred as apomorphic presenting a morphocline with the following different apomorphic states: setae additional on interval 2, 4, and 6 resulting in setae present on intervals 2-6 (a); setae additional on interval 7 resulting in setae on intervals 2-7 (b); loss of setae on intervals 2, 4, and 6 resulting in setae on intervals 3, 5, and 7 (c).
32. Alae fully developed (0): plesiomorphic by outgroup comparison; reduced (1): apomorphic and presumably convergently developed. For the species with polymorphous alae (*T. variabilis* n.sp.) the character is considered like fully winged species.
33. The type of the aedeagus is different from the sister-group as well as from *Clivina* and most of the other Clivinini. In the ingroup it exhibits an elongated spatula at apex. However, a spatulate apex is present in *Leleuporella* and at a minimum in one member of *Syleter* but with a different direction to the median lobe. Therefore an apex with spatula (0) is inferred to be plesiomorphic. Margin of spatula thickened or bend laterally (2), or stick-like (1): different apomorphic states only present in the ingroup and presumably developed independently.
34. A very small total size of the aedeagus in relation to body size is observed only in one species group of the ingroup and inferred to be apomorphic (1). Relation of aedeagus size to body size as in the sister-group and many other Clivinini: plesiomorphic (0).
35. Parameres with 2 apical setae (0): present in the sister-group and inferred to be plesiomorphic; with additional fine pilus at apex (1), or more than 2 well developed setae (2): presumably different apomorphic states perhaps developed independently.

For some of the characters assessing of the character states causes difficulties. This is true for one of the characters with opposite polarisation (27: shape of elytra, lateral view), and for characters in addition not well polarisable by outgroup comparison (33: apex of aedeagus; 35: setae at apex of parameres). These characters weakly support the cladogram.

Another difficulty arises from characters typical for some species groups but also present in members of other groups obviously representing homoplasies. Typical examples are 3: wings of clypeus, 8: keel on frons, and 9: reticulation on frons. These difficulties impeding considerably phylogenetic reasoning were also observed for other highly specialised Carabidae with common parallel evolution (BAEHR 1997).

Analysing the data matrix (Tab. 5) resulted in a cladogram with smallest number of branches (Fig. 178) with the following 7 species groups:

Hispidulus-group. The 4 species exhibit similar male and female genitalia considered to be of a plesiomorphic type. However *T. fuscus* exhibits an evolved spatula of the apex of the aedeagus. The group is heterogeneous with regard to the external characters: *T. hispidulus* has the most plesiomorphic characters, followed by *T. fuscus*. Mainly due to the specialised pronotum, *T. crinitus* is regarded as highly apomorphic and these characters are already visible but only slightly developed in *T. baehri*.

Hirsutus-group. In this group the aedeagi and the female genitalia are similar and plesiomorphic. The 3 species are highly apomorphic with regard to the external characters. Due to the highly derived characters of the pronotum, *T. setosus* is isolated. In *T. arcuatus*, the reduced eyes and alae, and the subserrate lateral margin of the elytra point to an adaptation to endogeous habitats. Out of this group, *T. hirsutus* is less specialised in the external characteristics and shows the most plesiomorphic parameres of the male genitalia.

Alternans-group. This is also a highly apomorphic group, and each of the 3 members show extreme specialisation. Beside other apomorphic characters, *T. alternans* exhibits a reduction of the setae on the labrum regarded as highly apomorphic. *T. palpireductus* seems to have more plesiomorphic characters. With regard to the internal characters the aedeagi of *T. alternans* and *T. lompei* are plesiomorphic.

Interpunctatus-group. This relatively homogenous group is moderately evolved in the external characters. Out of the 3 species, *T. appulsus* shows the highest evolved adaptations to endogeous conditions, whereas *T. interpunctatus* is assumed to have the most plesiomorphic characters. In the male genitalia however, which are very small only in this group, the group is more heterogeneous. Beside the very different patterns of the teeth on the endophallus, the aedeagus of *T. parallelus* is stick-like, considered as highly apomorphic.

Schmidtii-group. The group is homogenous and combines plesiomorphic and very similar species. To my mind, of the recent species, *T. tonkinensis* represents the most primitive (in the sense of plesiomorphic) species of the genus, followed by *T. schmidtii*. With regard to the male genitalia, *T. birmanicus* is most apomorphic, demonstrated by the stick-like apex of the aedeagus as well as the broad and elongated petioles of the parameres.

TAB. 5

Character states of species of the genus *Trilophus* 1, 2, 3: different character states; a, b, c: different character states of a morphocline;
?: character state unknown

species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<i>hispidulus</i>	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	2	0	0
<i>fuscus</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>baehri</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1
<i>crinitus</i>	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	2	0	3
<i>hirsutus</i>	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0
<i>arcuatus</i>	0	0	1	0	1	1	1	0	1	0	0	1	0	0	0	2	1	0
<i>setosus</i>	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	2	1	2
<i>alternans</i>	0	0	0	0	0	1	1	0	1	1	1	0	0	0	0	0	0	0
<i>longei</i>	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0
<i>palpireductus</i>	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
<i>interpunctatus</i>	1	0	0	0	0	0	1	1	0	0	0	0	0	2	0	0	0	0
<i>appulsus</i>	1	0	0	0	0	1	1	0	0	0	0	0	0	2	0	0	0	0
<i>parallelus</i>	1	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0
<i>schmidtii</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
<i>tonkinensis</i>	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
<i>birmanicus</i>	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
<i>variabilis</i>	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
<i>schawalleri</i>	1	0	0	0	0	0	1	1	0	1	0	0	0	2	0	0	0	0
<i>ellipticus</i>	0	0	1	0	1	1	1	0	0	0	0	0	0	2	0	0	0	0
<i>loebli</i>	1	1	1	0	1	1	1	1	0	0	0	0	0	2	0	0	0	0
<i>serratus</i>	1	1	1	0	1	1	1	1	0	0	0	0	0	2	0	0	1	0
<i>weberi</i>	1	1	1	0	1	1	1	1	0	1	0	0	0	2	0	0	0	0
<i>serratus</i>	1	0	1	0	1	1	1	1	0	1	0	0	0	2	0	0	1	0
<i>convexus</i>	1	0	1	0	1	1	1	1	0	0	0	0	0	2	0	0	0	0
<i>acuminatus</i>	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	1	1	2
<i>elongatus</i>	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	1	0	2
<i>latusculus</i>	0	0	1	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0
<i>initiator</i>	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0

TAB. 5 (cont.).

species	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
<i>lispidulus</i>	0	0	0	1	1	0	1	0	1	0	0	0	a	0	0	0	0
<i>fuscus</i>	0	0	0	1	0	1	1	0	0	0	0	0	a	0	2	0	0
<i>baehri</i>	0	0	0	1	1	0	1	0	1	0	0	0	a	0	0	0	0
<i>crinitus</i>	0	0	0	1	1	0	1	0	1	0	0	0	a	0	?	?	?
<i>liristatus</i>	0	0	1	1	0	1	0	0	1	0	0	0	b	0	0	0	0
<i>arcuatus</i>	0	0	0	0	0	1	0	0	1	0	1	0	b	1	0	0	0
<i>setosus</i>	1	0	0	0	0	1	1	0	1	0	0	0	b	0	0	0	0
<i>alternans</i>	0	0	0	0	0	1	0	2	0	1	2	0	c	1	0	0	0
<i>lompei</i>	0	1	2	0	0	1	0	2	0	0	0	0	c	0	0	0	0
<i>palpireductus</i>	0	0	0	0	0	1	0	2	0	0	0	0	c	1	?	?	?
<i>interpunctatus</i>	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	1	0
<i>appulsus</i>	0	0	0	0	1	0	1	1	0	0	1	0	0	1	2	1	0
<i>parallelus</i>	0	0	0	0	1	0	1	1	0	0	0	1	0	0	1	1	0
<i>schmidti</i>	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0
<i>tonkinensis</i>	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0
<i>birmanicus</i>	0	0	0	0	0	1	1	0	1	0	0	0	0	0	1	0	0
<i>variabilis</i>	0	0	0	1	1	1	1	2	0	0	1	0	0	1	1	0	2
<i>schawalleri</i>	0	0	0	0	1	0	1	2	2	1	1	0	0	1	2	0	0
<i>ellipticus</i>	0	0	0	1	0	0	1	2	2	0	0	0	0	1	0	0	0
<i>loebli</i>	0	0	0	0	1	0	1	2	0	0	0	0	1	0	0	0	0
<i>serratulus</i>	0	0	0	0	0	0	1	2	0	0	1	0	0	1	2	0	1
<i>weberi</i>	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	1
<i>serratus</i>	0	0	0	0	0	1	1	2	0	0	2	0	0	1	0	0	0
<i>convexus</i>	0	0	0	0	0	0	1	2	2	1	1	0	0	1	2	0	0
<i>acuminatus</i>	0	0	0	1	?	0	0	0	1	0	0	0	0	0	0	0	0
<i>elongatus</i>	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0
<i>latusculus</i>	0	0	0	0	1	0	0	0	0	0	0	0	0	1	?	?	?
<i>initiator</i>	0	0	0	0	1	0	0	0	0	0	0	0	0	1	?	?	?

Ellipticus-group. This group combines highly apomorphic species with a similar direction of adaptations. All species possess reduced eyes and alae, nearly all of them have developed tumid genae and serration at the lateral margin of the elytra, and some species show depigmentation. All these characteristics are considered to be edaphic adaptations. With regard to these characters, *T. serratus*, *T. loebli*, and *T. serratulus* are highly apomorphic and can be considered as troglobiont or even neotroglobiont (in the sense of NITZU & JUBERTHIE 1996). *T. ellipticus* is not as high evolved. The adaptation has reached different stages, interspecifically, especially demonstrated by the regression in the evolution of the eyes in Fig. 177. In addition, the following can be observed: The smaller the eyes, the greater the variation of the eye-index (comp. Fig. 177). The degree of eye reduction does not correlate with the degree of alae reduction or with the development of the serration at the lateral margin of the elytra. These findings may presumably be caused by recent evolution of the species.

With focus on the external characteristics, *T. variabilis* is the most plesiomorphic species in view of the following combination of plesiomorphic character states: Wings of clypeus rounded, keel on the frons small, genae inconspicuous, pronotum moderately convex, parts of the population with fully developed alae (for the size of alae comp. Tab. 2). However, important apomorphic character states are the elliptical shape, subserrate lateral margin of elytron, and slightly reduced eyes. Strikingly apomorphic are the male genitalia with stick-like apex of the aedeagus and increased number of setae at the apex of the parameres (Tab. 3). With regard to the aedeagi, *T. schawalleri*, *T. serratulus*, and *T. convexus* exhibit apomorphic character states demonstrated by an evolved spatula of the apex.

Distribution of some character states of the elytra (26 - 29) are confusing in this group and the phylogenetic relationships of *T. variabilis* and *T. schawalleri* are not yet settled.

Acuminatus-group. The 4 species are provisionally assigned in the group. One reason is that the male genitalia of 2 species are unknown. The parameres of *T. acuminatus* and *T. elongatus* show apomorphic character states with focus on the extremely elongated petioles, but the shape of the aedeagus of *T. elongatus* is of the plesiomorphic type. With regard to the external characters, the group combines heterogeneous species with some synplesiomorphies. *T. acuminatus* and *T. latiusculus* seem to have the most apomorphic characters, mainly due to the specialised pronotum. *T. imitator* is most difficult to assess and the single female from Bali assigned to this species represent possibly a subspecies of *T. latiusculus* from Java. Anyway, assessment of the phylogenetic relationships is complicated and should be reassessed when more material is available.

ZOOGEOGRAPHIC ASPECTS

The genus *Trilophus* has been recorded exclusively from the Oriental region (Fig. 179). Although this region is far from being well investigated, rough distribution patterns can already be recognised.

Based on numerical evaluations, DARLINGTON (1971) pointed out emphatically that ancestral stocks originated where most of the species occur presently. He

compared the distances and relative numbers of stocks moved between the Oriental and Australian regions and drew conclusions based on these numerical considerations (DARLINGTON 1971). He also emphasised that dominant animals evolve in large areas with a favourable climate (DARLINGTON 1959), and he concluded the direction of dispersal according to the relative numbers and relative areas (DARLINGTON 1957). Because these hypothesis match in some parts with the distribution patterns of *Trilophus*, it is tempting to simply transfer them.

However, I believe that another approach is more favourable due to much stronger evidence: In a monophyletic taxon, the area of origin and most plesiomorphic forms are usually mutually related. Apomorphic taxa with highest degree of evolution usually occur at the border(s) of the distribution area. This was given a great deal of attention by HENNIG (1966) and BRUNDIN (1966), applied partly by WHITEHEAD (1972), and supported with much evidence by BAEHR (1992, 1997, 1998).

Although the phylogenetic relationships of *Trilophus* are evaluated only basically, the following patterns can be recognised based on Hennig's principles.

A main distribution area is surely the East Indian - Indochinese region (East India, Burma, Thailand, Indochina) located in the geographic centre of the Oriental region and inhabited by 8 species (Tab. 6, Fig. 179).

TAB. 6

GEOGRAPHICAL DISTRIBUTION PATTERNS AND NUMBER OF SPECIES. (): OF THE NUMBER OF SPECIES LISTED, (N) SPECIES ARE FOUND IN MEGHALAYA.

species-group	distribution patterns			
	Central (NE-India, Burma, Thailand, Indochina)	Ceylonese (Ceylonese subregion)	S-Indonesian (S-Malayan subregion)	Northern (northern edge of the Oriental region)
<i>hispidulus</i>	2	--	2	--
<i>hirsutus</i>	--	2	1	--
<i>alternans</i>	1	1	1	--
<i>interpunctatus</i>	1 (1)	--	--	2
<i>schmidtii</i>	3 (1)	--	--	--
<i>ellipticus</i>	1 (1)	--	--	7
<i>acuminatus</i>	--	--	4	--
n species	8	3	8	9

It is remarkable that the species group with the most plesiomorphic characters (group *schmidtii*, Fig. 184) is found in this area only. This is also strong evidence that this was probably the region of origin for the genus. According to the records, the next related species, *T. tonkinensis* and *T. schmidtii*, are separated and it seems that distribution follows vicariance. However, the allopatric populations may be in contact by following a specific pattern at the contact zone (cf. SMITH 1965). So, a taxonomic re-

evaluation should be performed after sufficient records between North and South Vietnam and Laos are available. Interestingly, climate and vegetation of North and South Vietnam are different, and the climate and vegetation of South Vietnam and the area in Thailand inhabited by *T. schmidtii* is of the same type (drier). This is also true for the area around Calcutta where *T. schmidtii* is also recorded (Fig. 184). *T. birmanicus*, which is closely related to *T. schmidtii*, is partly distributed sympatrically with *T. schmidtii*. However, the aedeagus of *T. birmanicus* has highly apomorphic characters. Therefore, the possibility of hybridisation seems unlikely but it is not known whether it does occur.

It is assumed that *T. schmidtii* has a wider distribution range, e.g., over Bengal and Bangladesh, and *T. tonkinensis* is supposed to be distributed over the south of China and possibly on the island of Hainan.

Out of the group *hispidulus*, *T. hispidulus* possesses the most plesiomorphic characters and has a central distribution pattern similar to *T. schmidtii* (Fig. 180). *T. fuscus* is known from one locality near Bangkok only, and can hardly be interpreted. Due to similarities to North Vietnam in climate and vegetation, the island of Taiwan was assigned to the central distribution pattern. One rather apotypic species with atrophied wings (*T. alternans*, Fig. 182) is found on this island, regarded as an isolated species.

The East Indian - Indochinese region has apparently been the principal centre of dispersal.

Although centrally located geographically, Meghalaya is regarded as a special subarea. Beside *T. birmanicus*, which is found more in the lowland at the foot of the Khasi Hills, 2 other highly evolved species have been recorded exclusively in this area: *T. parallelus* was found in the western located Garo Hills, whereas *T. ellipticus* was collected in the separated eastern located massifs of the Khasi Hills. *T. ellipticus* is considered to be endemic due to its highly evolved adaptation to endogenous habitats. Ancestors of *T. parallelus* and *T. ellipticus* have probably invaded Meghalaya separately.

The Ceylonese distribution pattern (matching the Ceylonese subregion of the Oriental region) includes 3 species out of 2 species groups (Tab. 6, Figs. 181, 182), all of them characterised by highly apomorphic external characters. The species are geographically isolated, *T. arcuatus* with atrophied wings on Sri Lanka, and *T. hirsutus* and *T. lompei* at different massifs in Kerala.

The South Indonesian distribution pattern includes 8 species of 4 different species groups (Tab. 6). The species are found on the islands of Sumatra, Java, and Bali (Figs. 180, 181, 182, 185). For 4 of the species (*T. baehri*, *T. palpioreductus*, *T. acuminatus*, *T. imitator*) the labels are exact enough to indicate that the material was found in the mountains of the islands. With the exception of *T. elongatus*, *T. latiusculus*, and *T. imitator*, for which phylogenetic assessment is difficult, the species are apotypic. This kind of dispersal over the mountains of the islands of Indonesia mainly by small Carabid beetles was pointed out by DARLINGTON (1971) and called „mountain hopping“.

The south-eastward radiation seems to be strong because species of 4 groups are found on the islands. However, the genus has not crossed the Straits of Makassar (Wallace Line). Interestingly, members of the closely related Oriental and Ethiopian distributed genus *Trilophidius* Jeannel are found in South Thailand, the Malayan peninsula, Borneo, and Palawan (unpublished data), also not crossing the Straits of Makassar. On the other hand, the related genus *Syleter* Andrewes is spread from the Oriental region through New Guinea to Australia (DARLINGTON 1971).

The Northern distribution pattern includes 9 species of 2 species groups (Tab. 6, Figs. 183, 186) occurring along and in the mountain chains in the north of the Oriental region. *T. interpunctatus* has more plesiotypic characters and is found at the foot of mountains in Nepal. Unfortunately, the label of the lectotype indicates „north of India“, which is of limited value. However, it gives a hint that *T. interpunctatus* may be spread over a wider range. All other species have higher evolved characters including the development of atrophied wings. The North of Pakistan is inhabited by 3 species found in 3 different areas: The flightless *T. appulsus* was collected at the Lake Rawalpindi where the climate is rather dry. It is isolated from *T. serratulus* by the Indus River. The habitat of *T. serratulus* (Swat) is still influenced by the monsoon. The 3rd species (*T. loebli*) occurring in Dir and Chitral is isolated due to climatic conditions. The valleys opening to the west resulting in a more Palaearctic climate. This is also reflected in parts of the Flora (Löbl, pers. communication).

According to the present knowledge of the phylogenetic relationships a dispersal route from the central area to and along the Himalayas can be postulated for either of the species groups. During the Pleistocene the Himalayas possibly have acted as a refuge for preadapted ancestral stocks which were distributed formerly along the Himalayas in the present north of India causing the apparent disjunct distribution by splitting into separate isolates after dispersal.

Among the small Clivinini, many of the plesiomorphic characters of *Trilophus* are shared with the genus *Trilophidius* Jeannel considered to be the sister-group. *Trilophidius* is distributed with 11 species in equatorial Africa from Cote de Ivoire to Kenya. (BURGEON 1935, JEANNEL 1957, BASILEWSKY 1967, 1969) and 1 species in the Oriental region (JEANNEL 1957). I believe that *Trilophus* and *Trilophidius* are derived from a common ancestral stock originated in Africa. The ancestral stock could have developed before India was separated from the southern landmass (Gondwanaland) in late Jurassic. This scenario seems also to be true for the genus *Leleuporella* Basilewsky, which is related to *Trilophus*/*Trilophidius* and found as extremely specialised species in equatorial Africa as well as in Sri Lanka (BALKENOHL 1997). Hence, *Trilophus* could have been extinguished later in the present Africa because it has not been found there up to now. The other possibility would include that *Trilophus* is a relatively younger group which did not develop in Africa but evolved from an ancestral stock in the present India after India had separated from Africa. The genus then spread over the Oriental region in the Cretaceous.

Alphabetical list of the species		page
<i>acuminatus</i>	n. sp.	489
<i>alternans</i>	n. sp.	456
<i>appulsus</i>	n. sp.	463
<i>arcuatus</i>	n. sp.	453
<i>baehri</i>	n. sp.	448
<i>birmanicus</i>	Bates	469
<i>convexus</i>	n. sp.	487
<i>crinitus</i>	n. sp.	450
<i>ellipticus</i>	n. sp.	479
<i>elongatus</i>	n. sp.	490
<i>fuscus</i>	n. sp.	446
<i>hirsutus</i>	n. sp.	451
<i>hispidulus</i>	Putzeys	444
<i>imitator</i>	n. sp.	493
<i>interpunctatus</i>	Putzeys	461
<i>latiusculus</i>	n. sp.	492
<i>loebli</i>	n. sp.	481
<i>lompei</i>	n. sp.	457
<i>palpireductus</i>	n. sp.	459
<i>parallelus</i>	n. sp.	465
<i>schawalleri</i>	n. sp.	474
<i>schmidti</i>	Putzeys	467
<i>serratulus</i>	n. sp.	482
<i>serratus</i>	n. sp.	487
<i>setosus</i>	n. sp.	454
<i>tonkinensis</i>	n. sp.	472
<i>variabilis</i>	n. sp.	476
<i>weberi</i>	n. sp.	484

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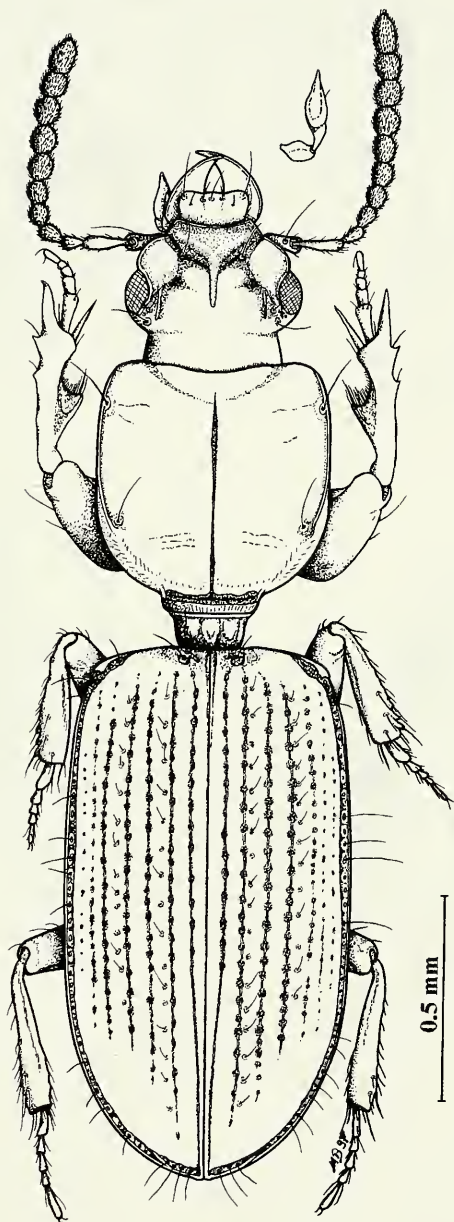
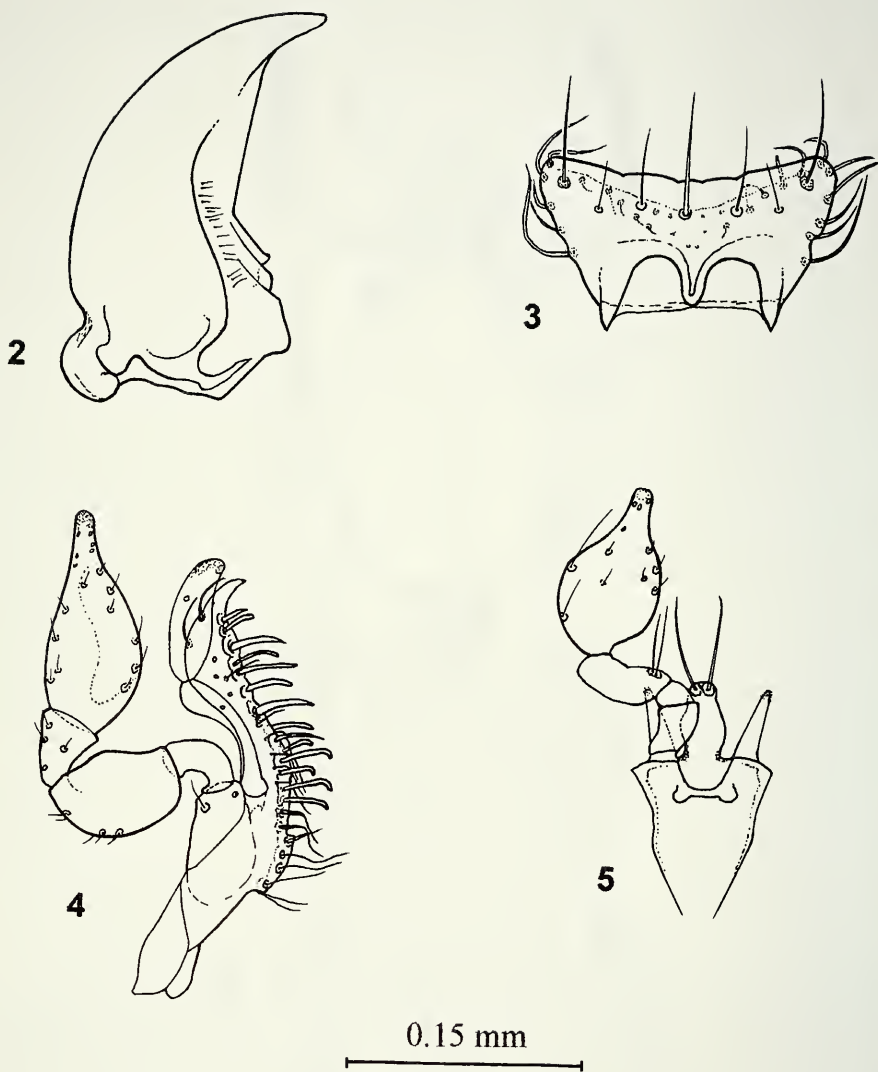


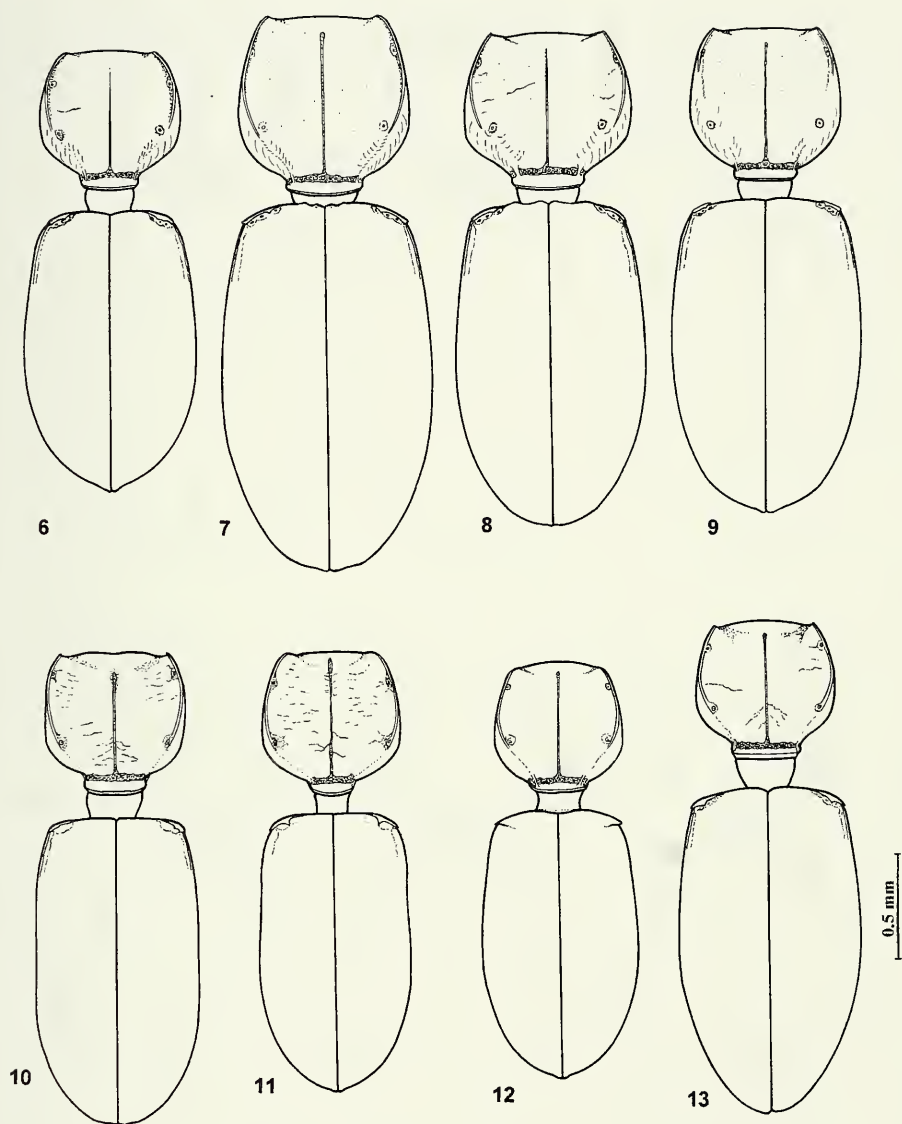
FIG. 1

Trilophus interpunctatus Putzeys, lectotype, habitus and maxillary palpus



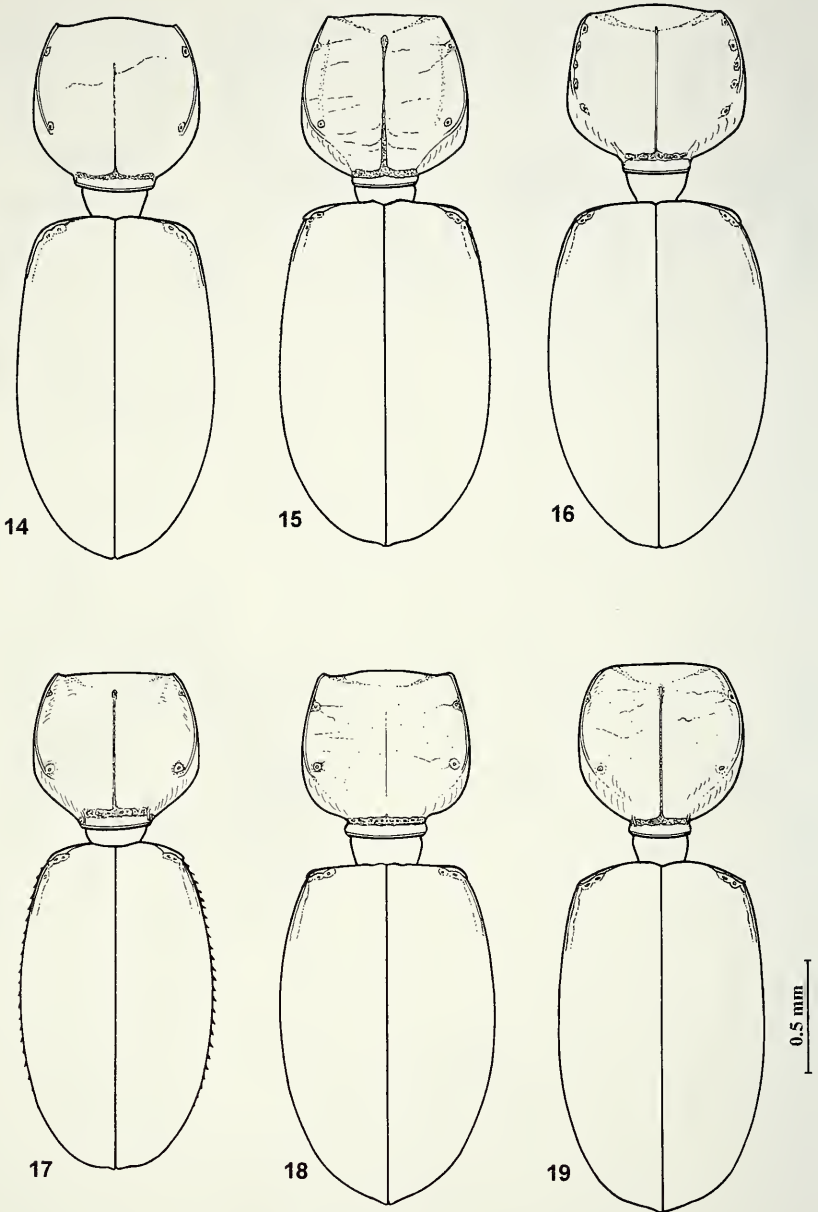
FIGS 2-5

Trilophus schmidtii Putzeys. 2. right mandible; 3. labrum, dorsal view; 4. Maxilla and maxillary palpus; 5. glossa, paraglossa, and labial palpus.



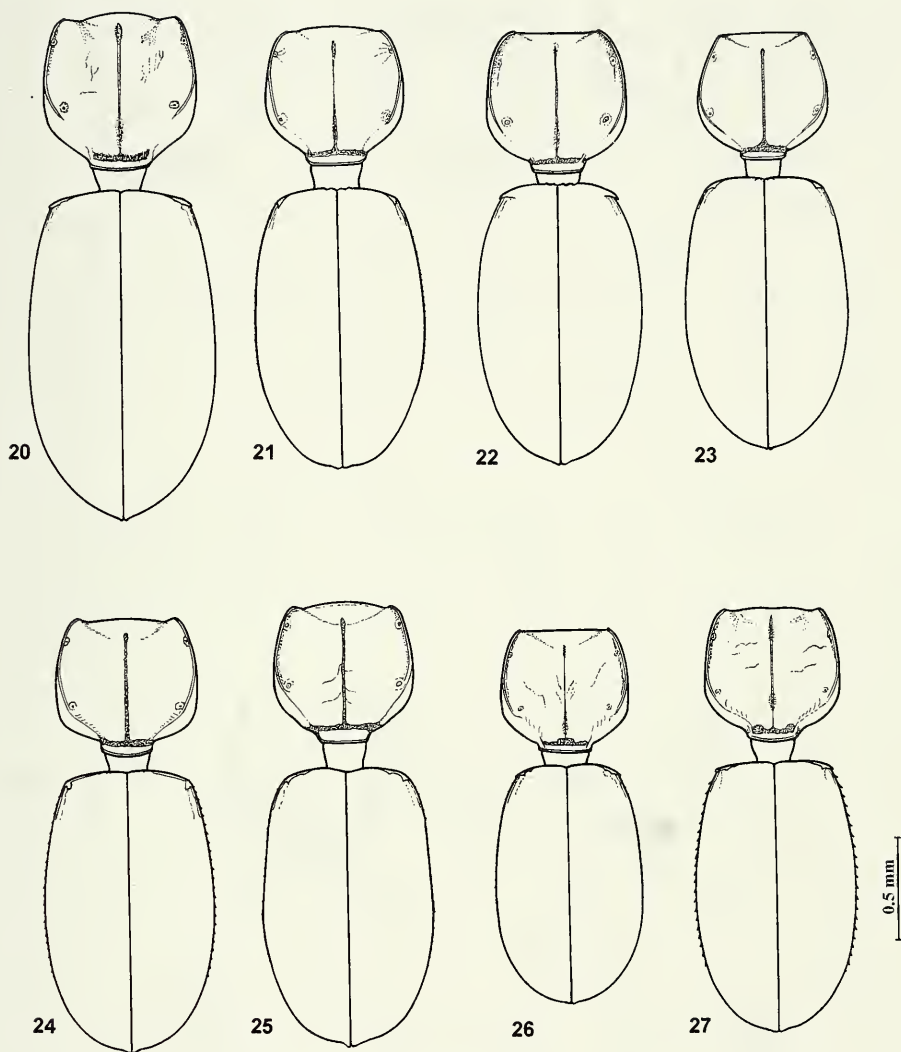
FIGS 6-13

Shape of pronotum and elytra, dorsal view. 6. *T. hispidulus* Putzeys; 7. *T. fuscus* n. sp.; 8. *T. baehri* n. sp.; 9. *T. crinitus* n. sp.; 10. *T. parallelus* n. sp.; 11. *T. appulsus* n. sp.; 12. *T. schmidtii* Putzeys; 13. *T. birmanicus* Bates.



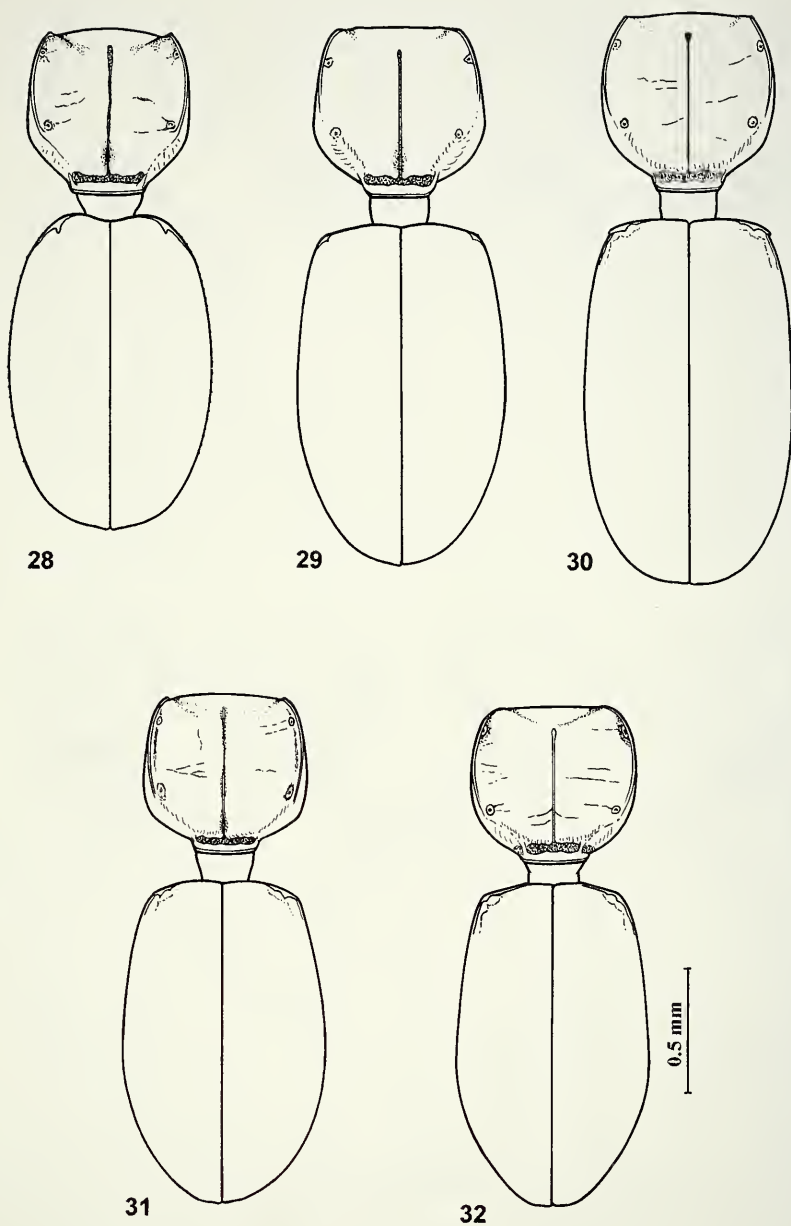
FIGS 14-19

Shape of pronotum and elytra, dorsal view. 14. *T. hirsutus* n. sp.; 15. *T. arcuatus* n. sp.; 16. *T. setosus* n. sp; 17. *T. alternans* n. sp.; 18. *T. lompei* n. sp.; 19. *T. palpireductus* n. sp.



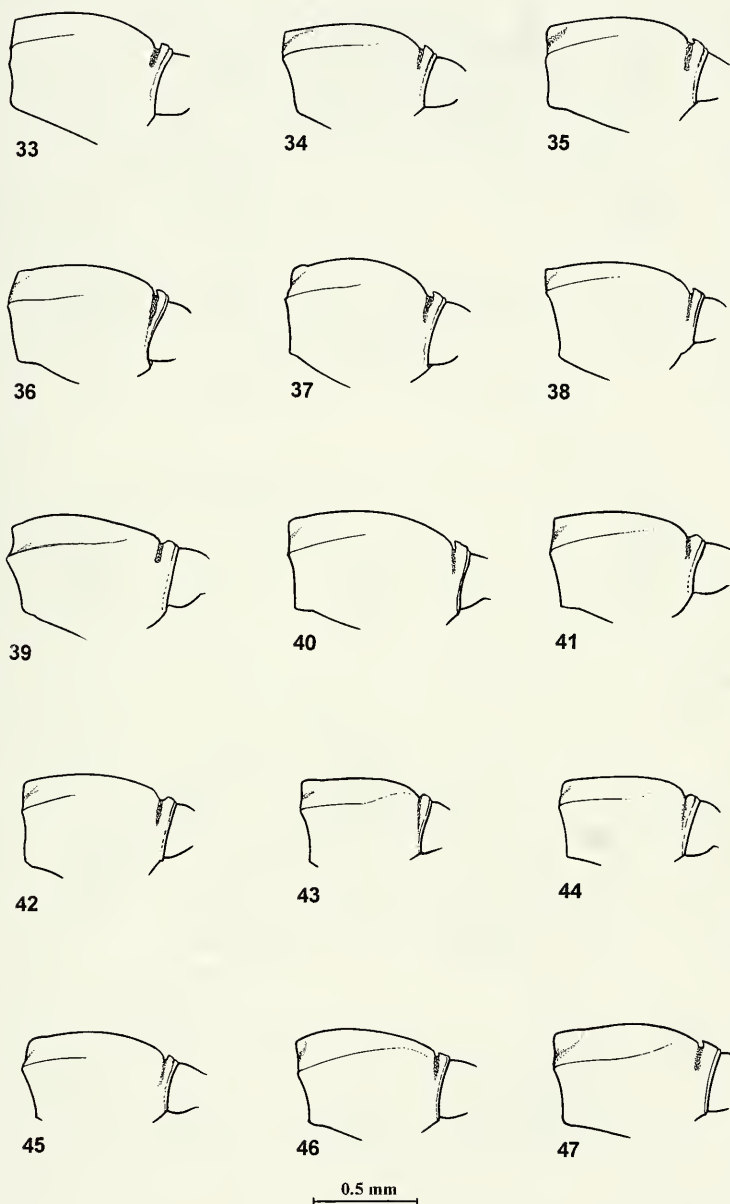
FIGS 20-27

Shape of pronotum and elytra, dorsal view. 20. *T. tonkinensis* n. sp.; 21. *T. variabilis* n. sp.; 22. *T. ellipticus* n. sp.; 23. *T. loebli* n. sp.; 24. *T. serratulus* n. sp.; 25. *T. weberi* n. sp.; 26. *T. schawalleri* n. sp.; 27. *T. serratus* n. sp.



FIGS 28-32

Shape of pronotum and elytra, dorsal view. 28. *T. convexus* n. sp.; 29. *T. acuminatus* n. sp.; 30. *T. elongatus* n. sp.; 31. *T. latiusculus* n. sp.; 32. *T. imitator* n. sp.



FIGS 33-47

Shape of pronotum, lateral view. 33. *T. hirsutus* n. sp.; 34. *T. arcuatus* n. sp.; 35. *T. setosus* n. sp.; 36. *T. alternans* n. sp.; 37. *T. lompei* n. sp.; 38. *T. palpieductus* n. sp.; 39. *T. hispidulus* Putzeys.; 40. *T. fuscus* n. sp.; 41. *T. baehri* n. sp.; 42. *T. crinitus* n. sp.; 43. *T. parallelus* n. sp.; 44. *T. appulsus* n. sp.; 45. *T. schmidtii* Putzeys; 46. *T. birmanicus* Bates; 47. *T. tonkinensis* n. sp.



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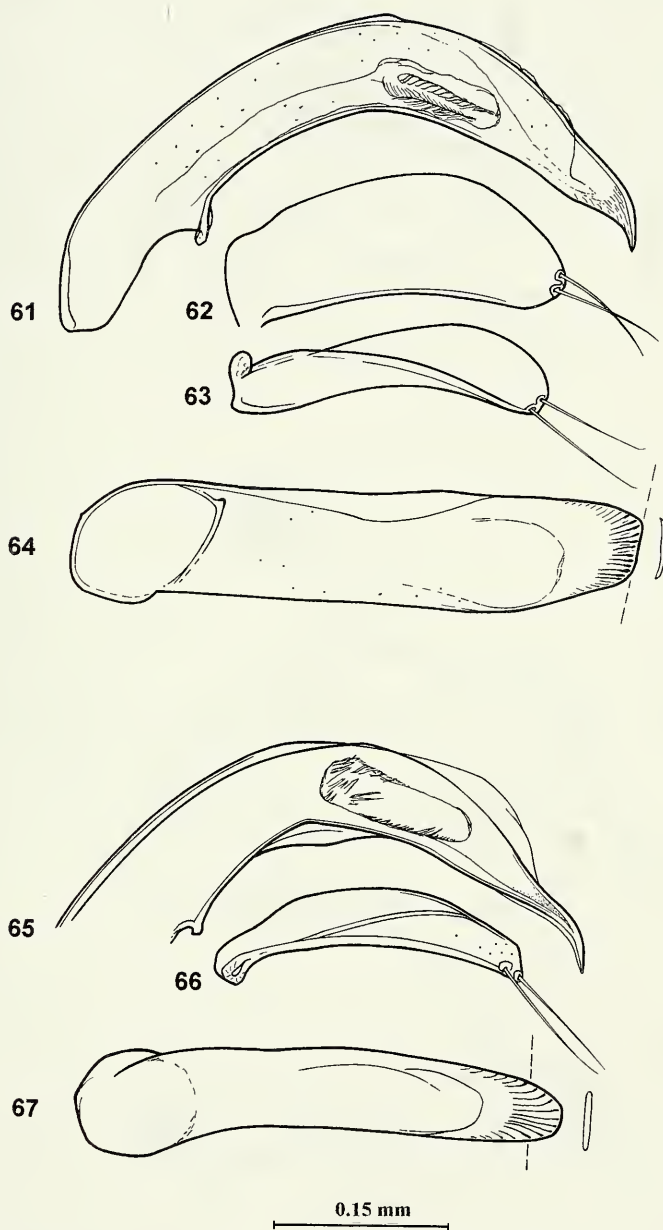
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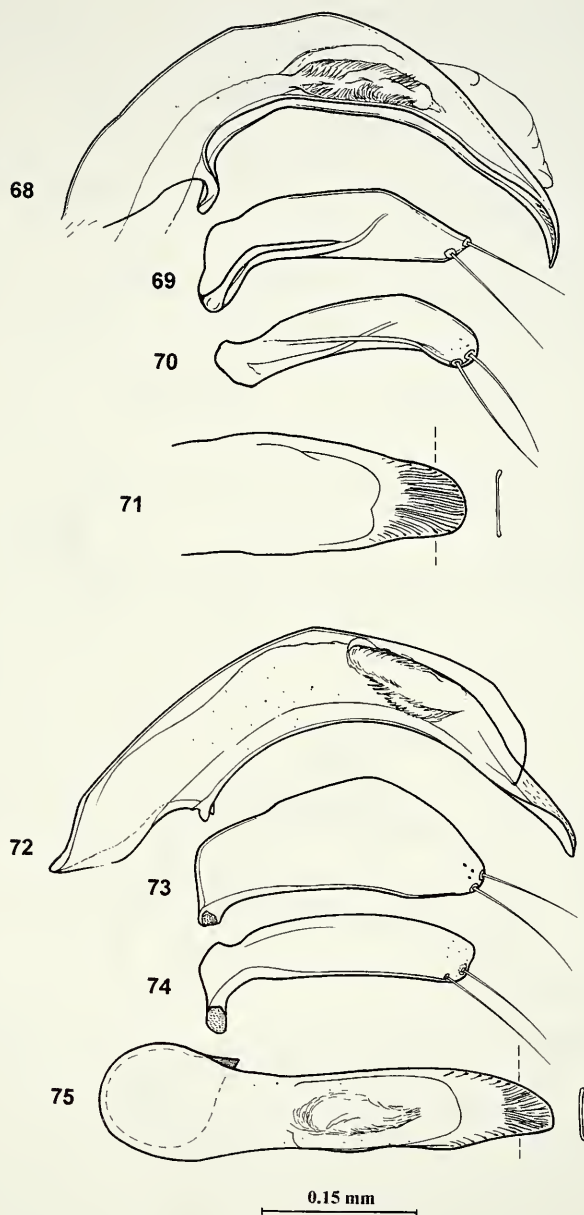
FIGS 48-60

Shape of pronotum, lateral view. 48. *T. interpunctatus* Putzeys; 49. *T. variabilis* n. sp.; 50. *T. ellipticus* n. sp.; 51. *T. loebli* n. sp.; 52. *T. serratulus* n. sp.; 53. *T. weberi* n. sp.; 54. *T. schawalleri* n. sp.; 55. *T. serratus* n. sp.; 56. *T. convexus* n. sp.; 57. *T. acuminatus* n. sp.; 58. *T. elongatus* n. sp.; 59. *T. latiusculus* n. sp.; 60. *T. imitator* n. sp.



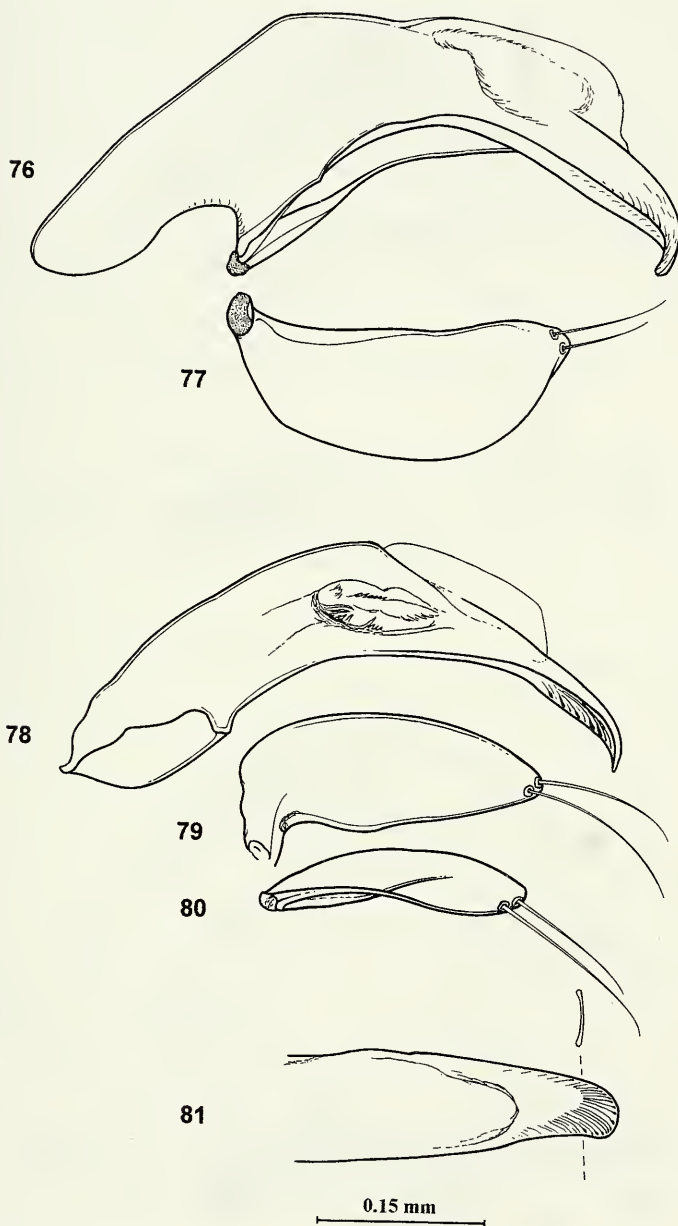
FIGS 61-64. *T. fuscus* n. sp., male genitalia; 61. Aedeagus, ventral view; 62. Ventral paramere; 63. Dorsal paramere; 64. Aedeagus, lateroapical view with cross-section of apex.

FIGS 65-67. *T. baehri* n. sp., male genitalia; 65. Aedeagus, ventral view with dorsal paramere; 66. Ventral paramere; 67. Aedeagus, lateroapical view with cross-section of apex



FIGS 68-71. *T. lompei* n. sp., male genitalia; 68. Aedeagus, ventral view; 69. Ventral paramere; 70. Dorsal paramere; 71. Aedeagus, lateroapical view with cross-section.

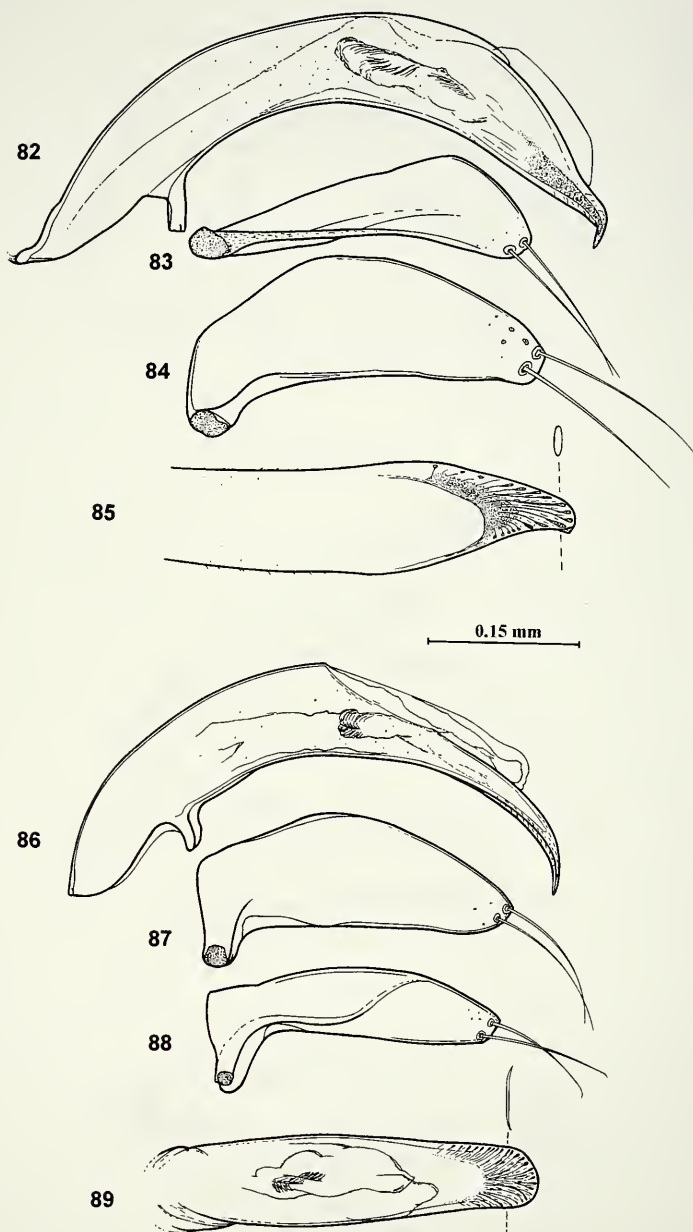
FIGS 72-75. *T. hispidulus* Putzeys, male genitalia; 72. Aedeagus, ventral view; 73. Ventral paramere; 74. Dorsal paramere; 75. Aedeagus, lateroapical view with cross-section of apex.



study in applying the method.

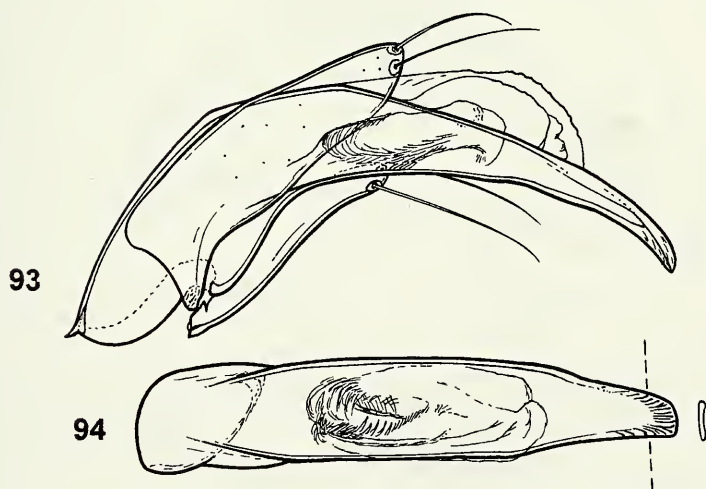
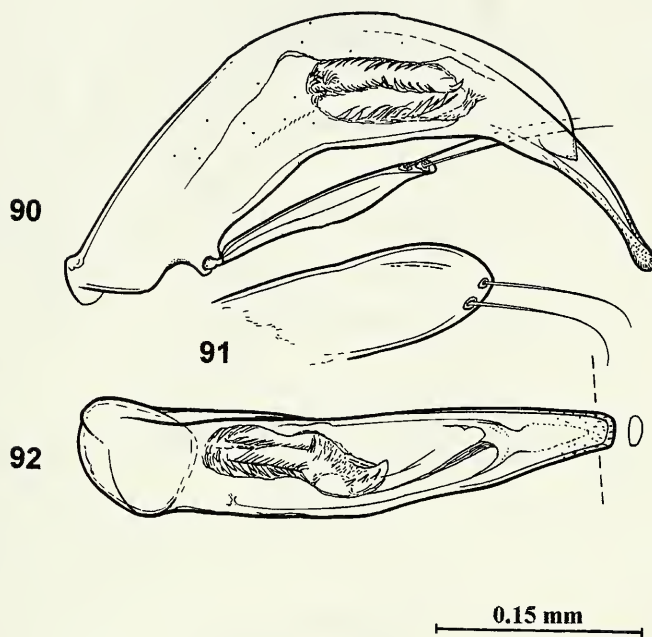
FIGS 76-77. *T. setosus* n. sp., male genitalia; 76. Aedeagus, ventral view with dorsal paramere; 77. Ventral paramere.

FIGS 78-81. *T. alternans* n. sp., male genitalia; 78. Aedeagus, ventral view; 79. Ventral paramere; 80. Dorsal paramere; 81. Aedeagus, lateroapical view with cross-section of apex.



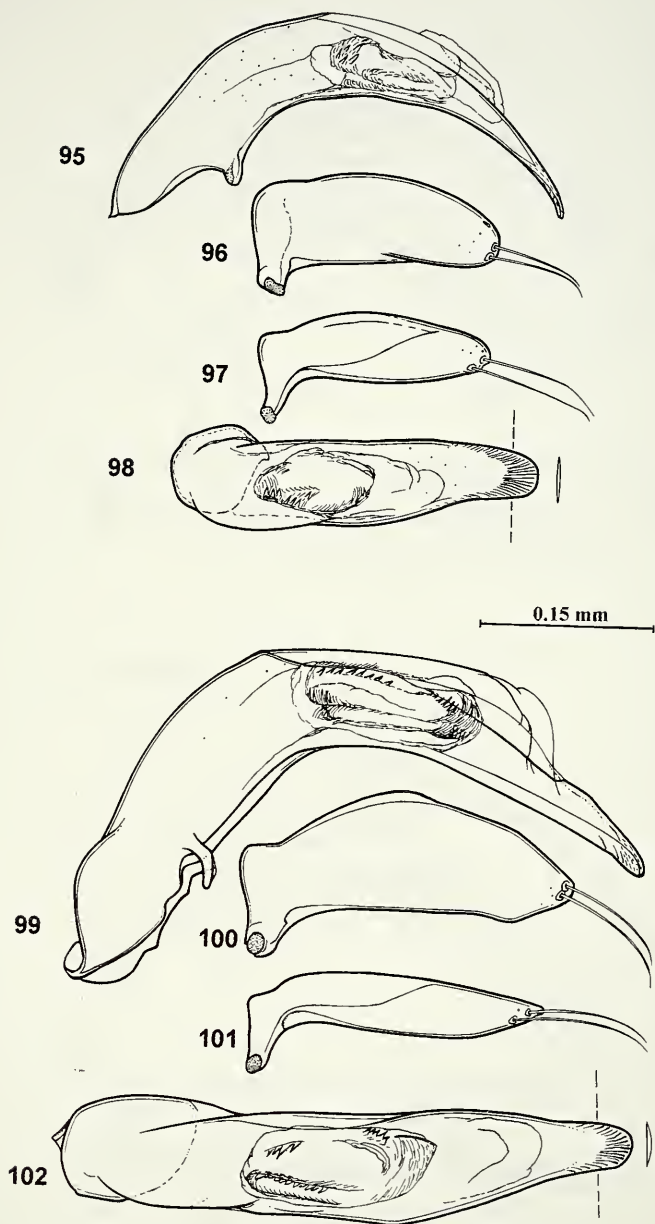
FIGS 82-85. *T. hirsutus* n. sp., male genitalia; 82. Aedeagus, ventral view; 83. Ventral paramere; 84. Dorsal paramere; 85. Aedeagus, lateroapical view with cross-section of apex.

FIGS 86-89. *T. arcuatus* n. sp., male genitalia; 86. Aedeagus, ventral view; 87. Ventral paramere; 88. Dorsal paramere; 89. Aedeagus, lateroapical view with cross-section of apex.



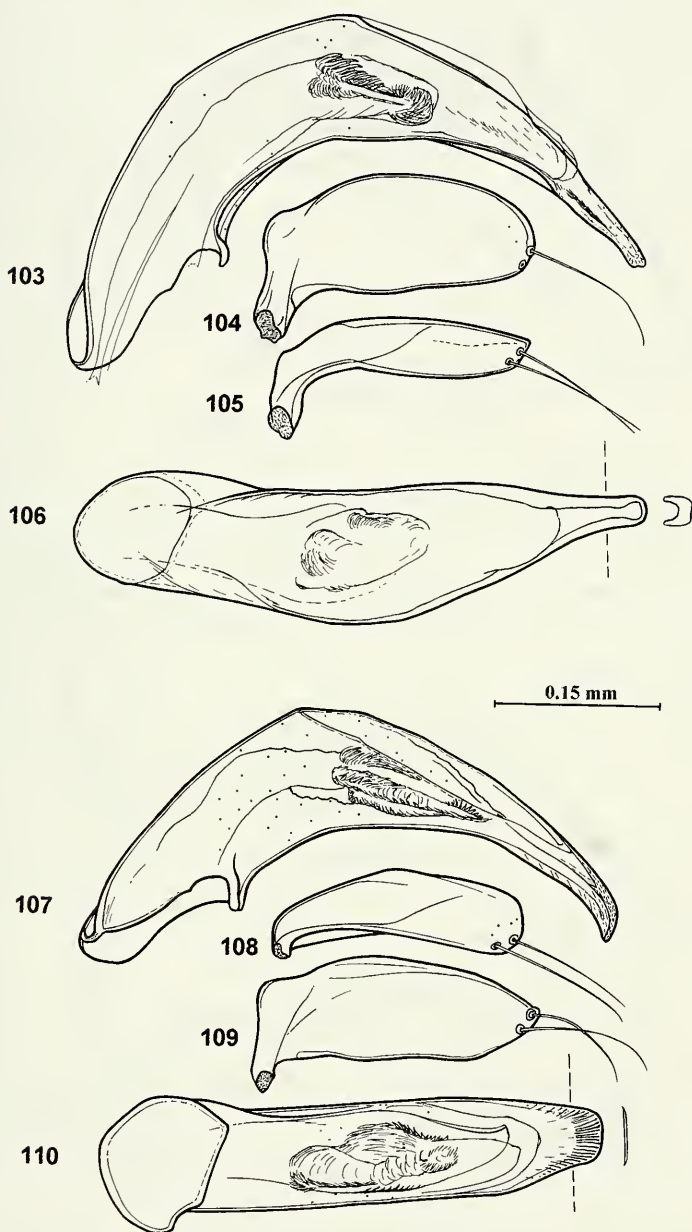
FIGS 90-92. *T. parallelus* n. sp., male genitalia; 90. Aedeagus, ventral view with ventral paramere; 91. Dorsal paramere; 92. Aedeagus, lateroapical view with cross-section of apex.

FIGS 93-94. *T. appulsus* n. sp., male genitalia; 93. Aedeagus, ventral view with parameres; 94. Aedeagus, lateroapical view with cross-section of apex.



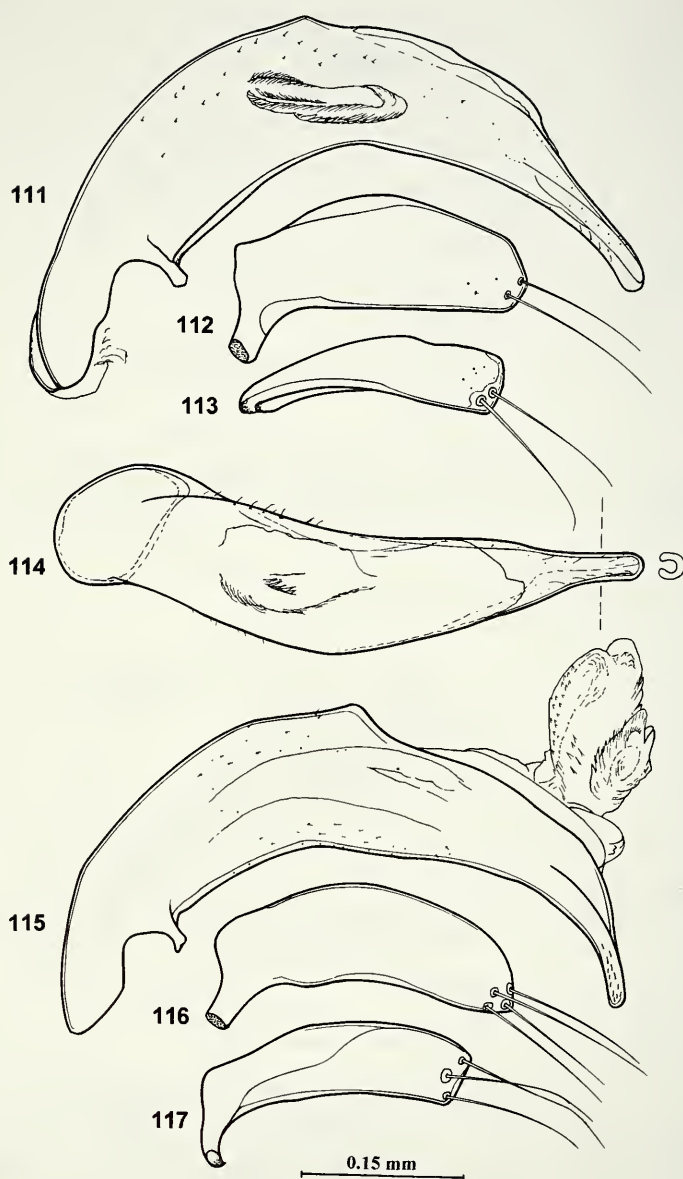
FIGS 95-98. *T. interpunctatus* Putzeys, male genitalia; 95. Aedeagus, ventral view; 96. Ventral paramere; 97. Dorsal paramere; 98. Aedeagus, lateroapical view with cross-section of apex.

FIGS 99-102. *T. schmidtii* Putzeys, lectotype, male genitalia; 99. Aedeagus, ventral view; 100. Ventral paramere; 101. Dorsal paramere; 102. Aedeagus, lateroapical view with cross-section of apex.



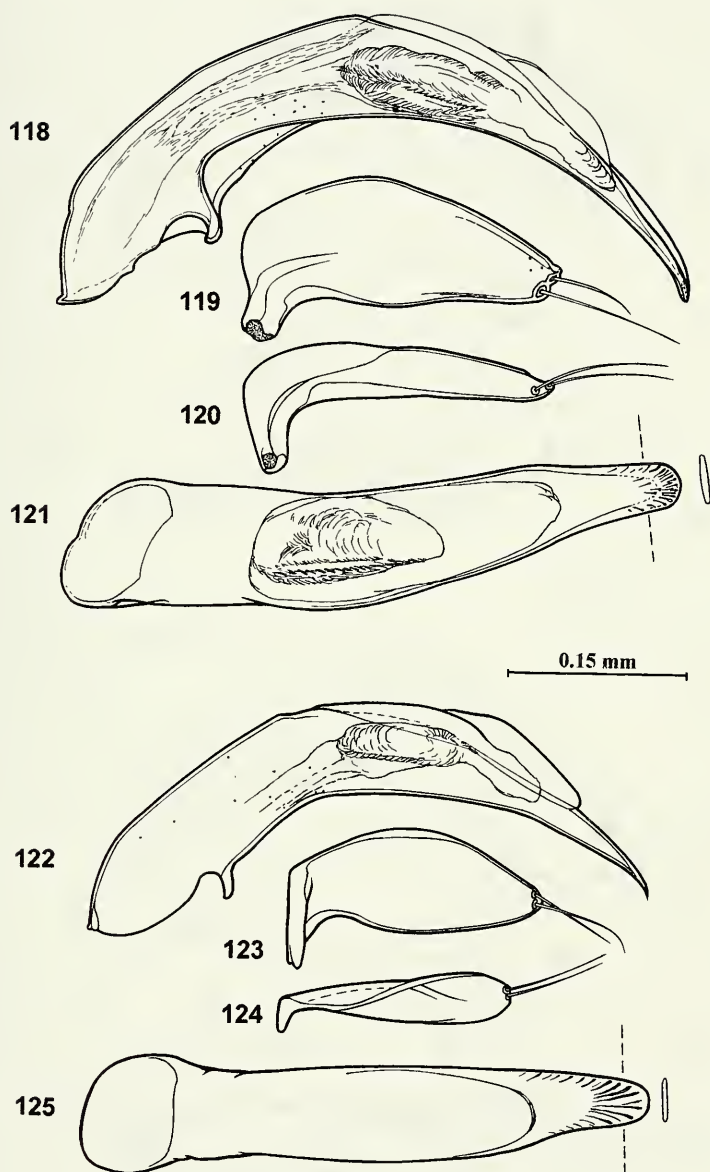
FIGS 103-106. *T. birmanicus* Bates, male genitalia; 103 Aedeagus, ventral view; 104. Ventral paramere; 105. Dorsal paramere; 106. Aedeagus, lateroapical view with cross-section of apex.

FIGS 107-110. *T. tonkinensis* n. sp., male genitalia; 107. Aedeagus, ventral view; 108. Ventral paramere; 109. Dorsal paramere; 110. Aedeagus, lateroapical view with cross-section of apex.



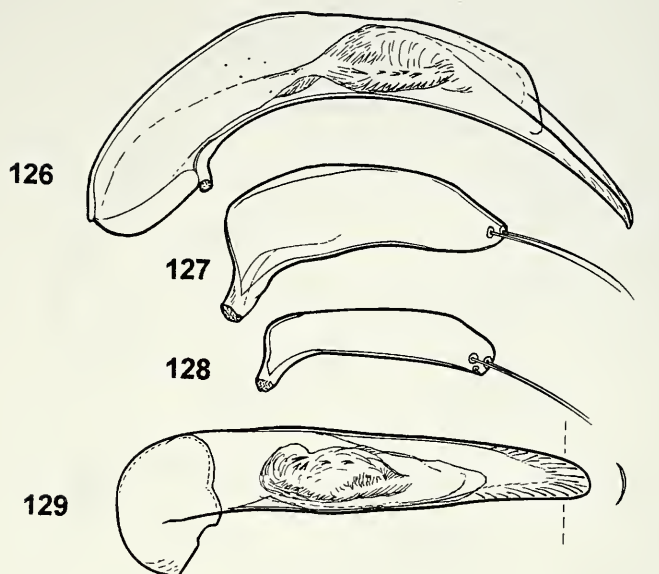
FIGS 111-114. *T. variabilis* n. sp., specimen from Gorkana Forest, male genitalia; 111. Aedeagus, ventral view; 112. Ventral paramere; 113. Dorsal paramere; 114. Aedeagus, lateroapical view with cross-section of apex.

FIGS 115-117. *T. variabilis* n. sp., specimen from Bagmati, Nagarjun Forest, male genitalia; 115. Aedeagus, ventral view with endophallus almost everted; 116. Ventral paramere; 117. Dorsal paramere.

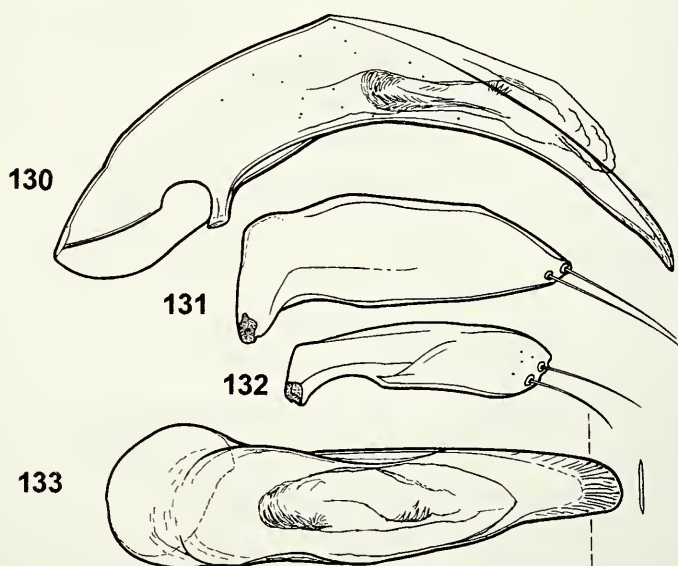


FIGS 118-121. *T. ellipticus* n. sp., male genitalia; 118. Aedeagus, ventral view; 119. Ventral paramere; 120. Dorsal paramere; 121. Aedeagus, lateroapical view with cross-section of apex.

FIGS 122-125. *T. loebli* n. sp., male genitalia; 122. Aedeagus, ventral view; 123. Ventral paramere; 124. Dorsal paramere; 125. Aedeagus, lateroapical view with cross-section of apex.

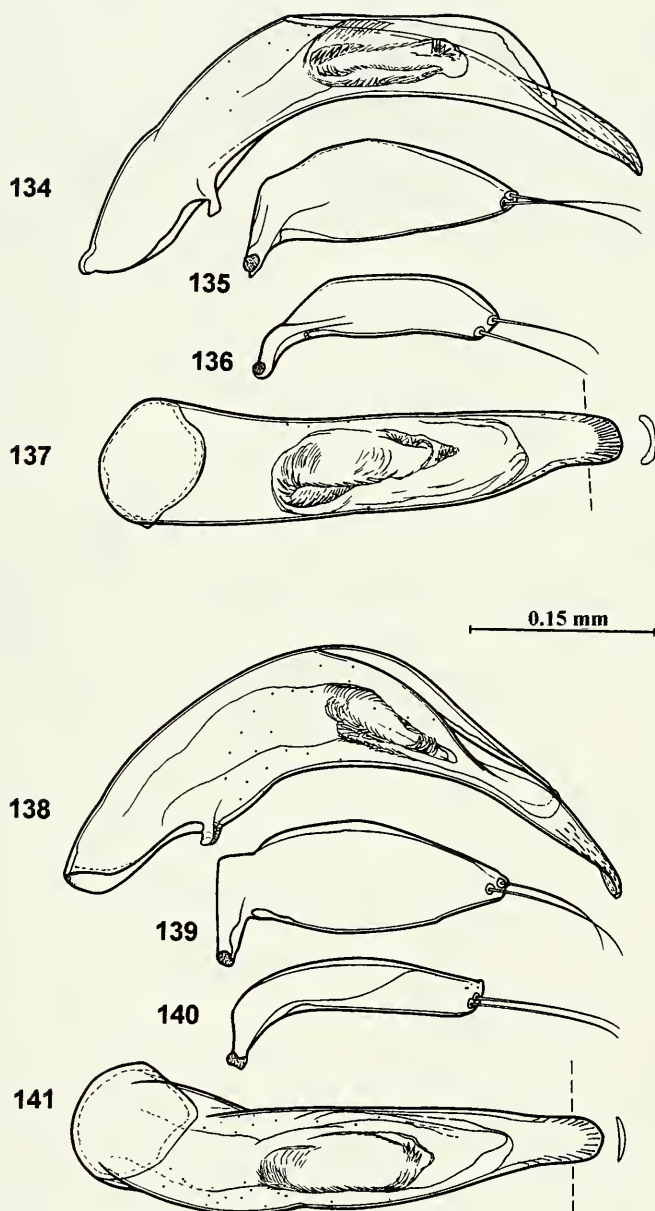


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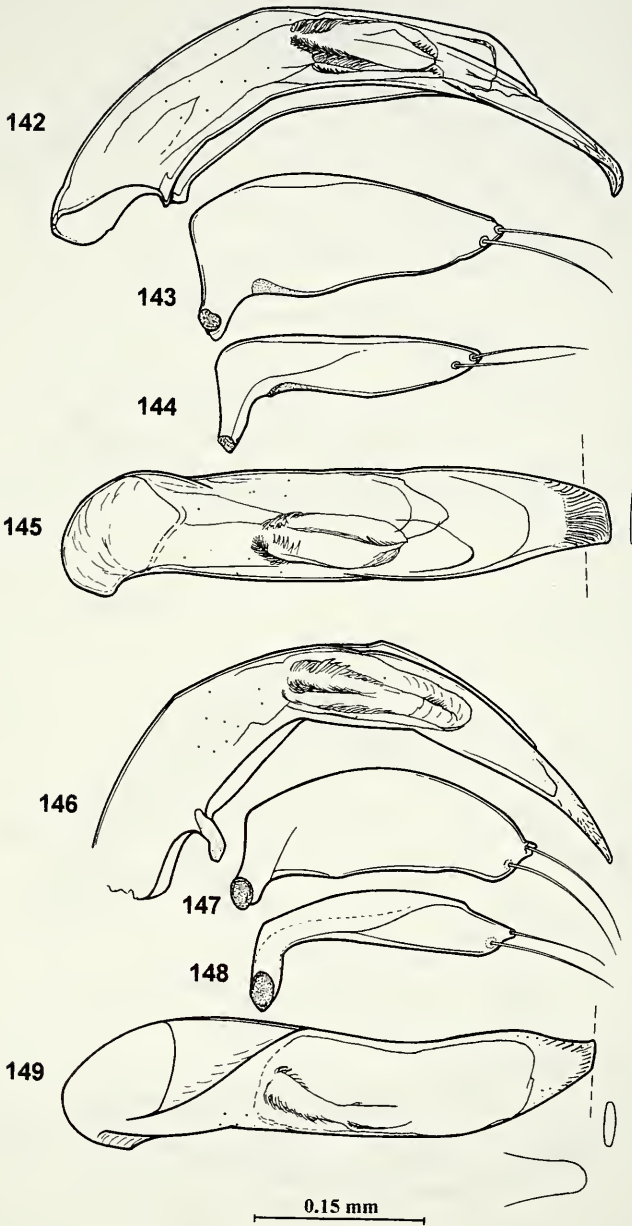
FIGS 126-129. *T. serratulus* n. sp., male genitalia; 126. Aedeagus, ventral view; 127. Ventral paramere; 128. Dorsal paramere; 129. Aedeagus, lateroapical view with cross-section of apex.

FIGS 130-133. *T. weberi* n. sp., male genitalia; 130. Aedeagus, ventral view; 131. Ventral paramere; 132. Dorsal paramere; 133. Aedeagus, lateroapical view with cross-section of apex.



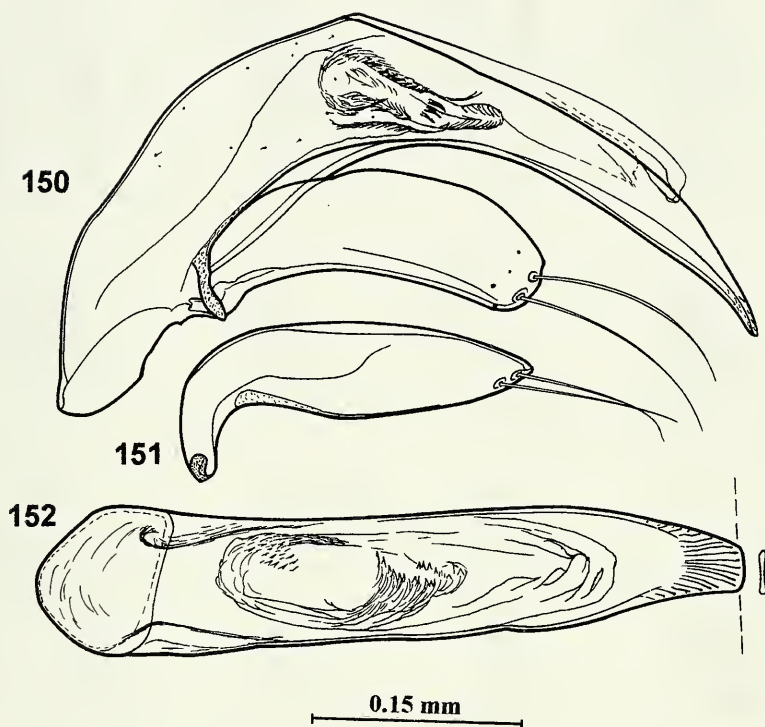
FIGS 134-137. *T. schawalleri* n. sp., male genitalia; 134. Aedeagus, ventral view; 135. Ventral paramere; 136. Dorsal paramere; 137. Aedeagus, lateroapical view with cross-section of apex.

FIGS 138-141. *T. serratus* n. sp., male genitalia; 138. Aedeagus, ventral view; 139. Ventral paramere; 140. Dorsal paramere; 141. Aedeagus, lateroapical view with cross-section of apex.



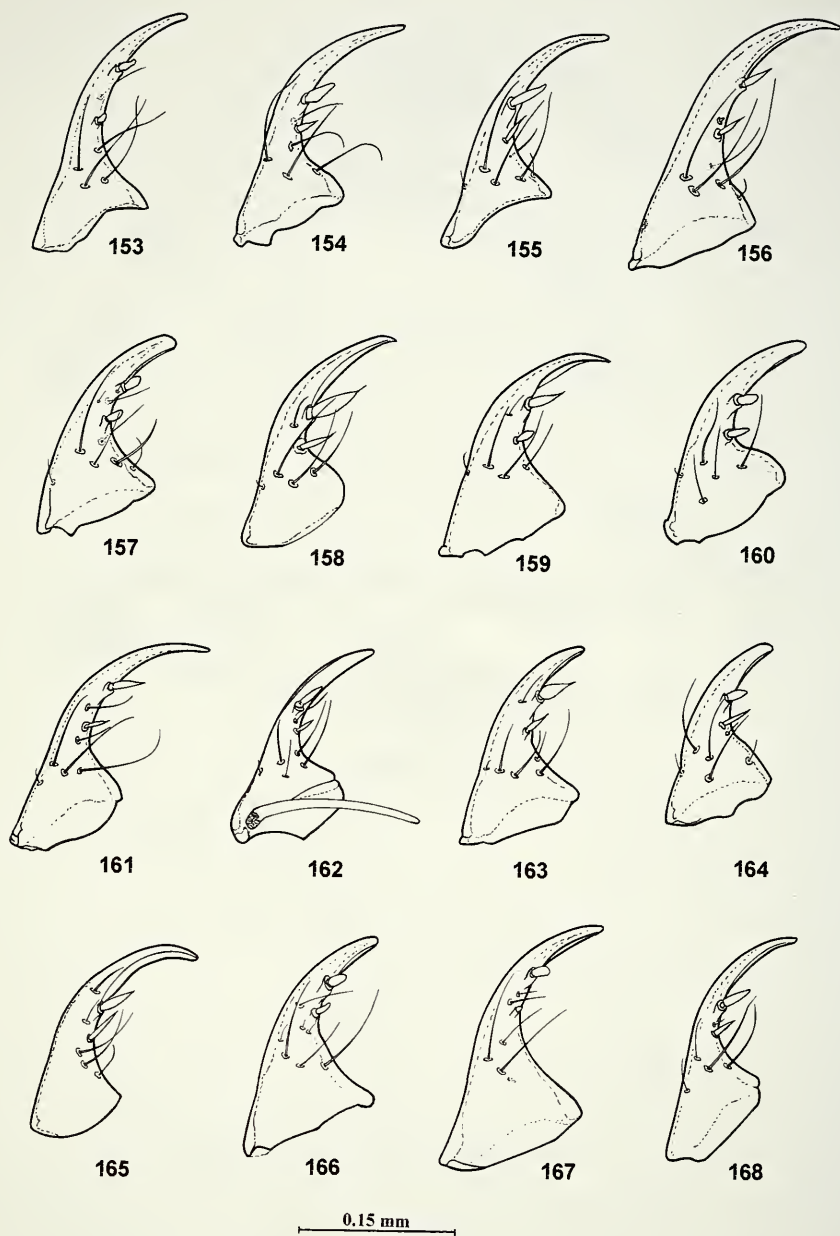
FIGS 142-145. *T. convexus* n. sp., male genitalia; 142. Aedeagus, ventral view; 143. Ventral paramere; 144. Dorsal paramere; 145. Aedeagus, lateroapical view with cross-section of apex.

FIGS 146-149. *T. acuminatus* n. sp., male genitalia; 146. Aedeagus, ventral view; 147. Ventral paramere; 148. Dorsal paramere; 149. Aedeagus, lateroapical view with cross-section of apex.

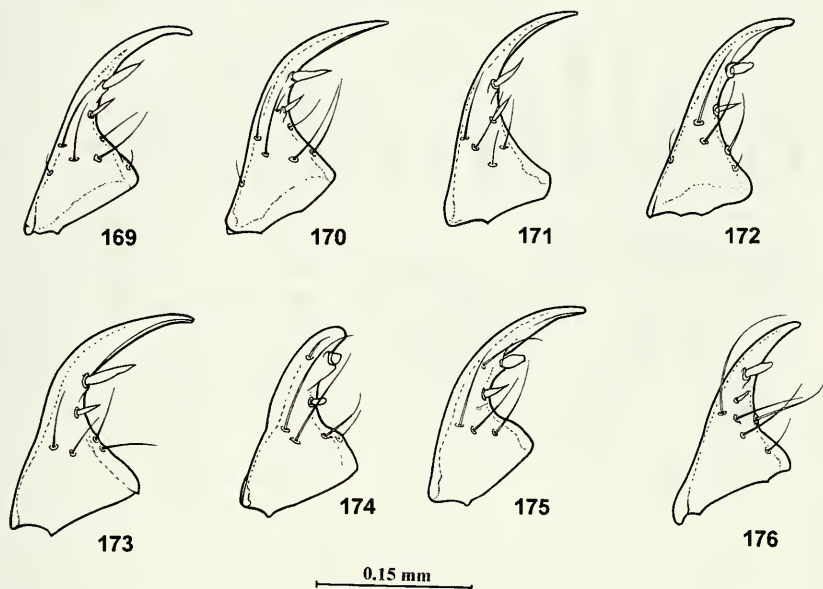


FIGS 150-152

T. elongatus n. sp., male genitalia; 150. Aedeagus, ventral view with dorsal paramere; 151. Ventral paramere; 152. Aedeagus, lateroapical view with cross-section of apex.



FIGS 153-168. Stylomere. 153. *T. hirsutus* n. sp.; 154. *T. arcuatus* n. sp.; 155. *T. alternans* n. sp.; 156. *T. lompei* n. sp.; 157. *T. palpireductus* n. sp.; 158. *T. hispidulus* Putzeys; 159. *T. baehri* n. sp.; 160. *T. crinitus* n. sp.; 161. *T. parallelus* n. sp.; 162. *T. interpunctatus* Putzeys; 163. *T. schmidti* Putzeys; 164. *T. birmanicus* Bates; 165. *T. tonkinensis* n. sp.; 166. *T. variabilis* n. sp.; 167. *T. ellipticus* n. sp.; 168. *T. loebli* n. sp.



FIGS 169-176. Stylomere. 169. *T. serratulus* n. sp.; 170. *T. weberi* n. sp.; 171. *T. schawalleri* n. sp.; 172. *T. serratus* n. sp.; 173. *T. acuminatus* n. sp.; 174. *T. elongatus* n. sp.; 175. *T. latiscutulus* n. sp.; 176. *T. imitator* n. sp.

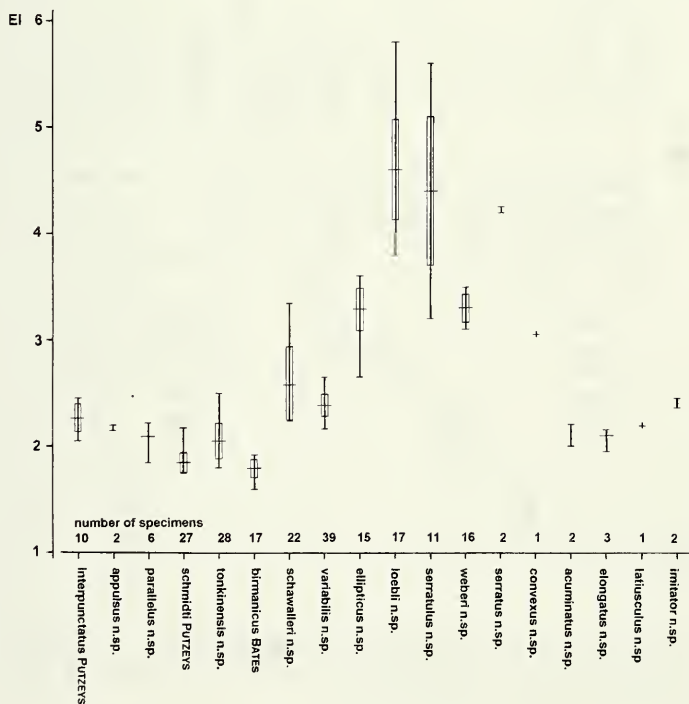


FIG. 177. Relative Eye-Index (EI) of species with setigerous punctures on intervals 3 and 5 of the elytron. Mean, absolute range, and standard deviation (s) is given. For calculation of the relative eye-index, see text (terms and morphology).



FIG. 179. Distribution of the genus *Trilophus* in the Oriental region
(recorded localities of all species plotted)



FIG. 180. Recorded distribution of species of the group *hispidulus*

- T. *hispidulus* Putzeys, × T. *fuscus* n.sp.,
 ▲ T. *baehri* n.sp., ⊗ T. *crinitus* n.sp.



FIG. 181. Recorded distribution of species of the group *hirsutus*

- T. *hirsutus* n.sp. × T. *arcuatus* n.sp. ▲ T. *setosus* n.sp.



FIG. 182. Recorded distribution of species of the group *alternans*

○ T. *alternans* n.sp., ▲ T. *lompei* n.sp., × T. *palpiroductus* n.sp.



FIG. 183. Recorded distribution of species of the group *interpunctatus*

○ T. *interpunctatus* PUTZEYS × T. *parallelus* n.sp. ★ T. *appulsus* n.sp.



FIG. 184. Recorded distribution of species of the group *schmidtii*

○ *T. schmidtii* PUTZEYS, ▲ *T. birmanicus* BATES, * *T. tonkinensis* n.sp.,



FIG. 185. Recorded distribution of species of the group *acuminatus*

○ *T. acuminatus* n.sp., ● *T. elongatus* n.sp.,
▲ *T. latiusculus* n.sp., * *T. imitator* n.sp.



FIG. 186. Recorded distribution of species of the group *ellipticus*

- *T. variabilis* n.sp., ▲ *T. schawalleri* n.sp., × *T. ellipticus* n.sp.,
 ◆ *T. loebli* n.sp., ⊕ *T. serratulus* n.sp., ★ *T. weberi* n.sp.,
 + *T. serratus* n.sp., ⊗ *T. convexus* n.sp.

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